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Business technologists

Professionals like Dennis Honan stand at the junction of IT, business. **106**

Sears, Roebuck's Dennis Honan

Software bugs are everywhere

But it's lack of support and vendor dishonesty that get users' goat, reports Gary H. Anthes. **26**

KEN JOUDREY

COMPUTERWORLD

The World's Technology Newspaper
www.computerworld.com
November 16, 1998 • Vol. 32 • No. 46 • $4/Copy

Users could be losers under code revision

▸ *Software costs could rise, vendor liability drop*

By Thomas Hoffman

ATTENTION, CIOS: Sneaking up on you is a little-known piece of legislation that could double your costs for shrink-wrapped software by this time next year.

LICENSING ISSUES

Critics say proposed revisions to the Uniform Commercial Code — a guideline that state legislatures use to write business contract laws — are biased in favor of software vendors [CW, June 29].

The current draft of UCC Article 2B removes legal protections that software buyers now enjoy, according to Susan H. Nycum, a Palo Alto, Calif., lawyer representing the Society for Information Management on the issue. For example, she said, it reduces vendor liability for software defects and viruses

Code revision, page 136

IT won't be home for the holidays

By Julia King

STUCK NEXT TO whiny Aunt Edna at Thanksgiving dinner? Count your blessings.

You could be among the legions of information technology workers stuck at the office this year testing newly implemented year 2000 software or trying to beat other year-end project deadlines.

Gary Peteritas, an SAP project manager at Hoechst Marion Roussel Inc. in Kansas City, Mo., said he expects he will be eating breakfast, lunch and dinner with IT colleagues during Thanksgiving weekend and at Christmastime. About 75 people from the pharmaceutical company's 200-person SAP project will be joining him on the job.

"We have a 1/1/99 go-live date, so we'll definitely be working over the holidays," Peteritas said.

So will Steve Frick, a systems analyst at Delfield Co., an equipment manufacturer in Mount Pleasant, Mich., which has less than seven weeks left to

Holidays, page 136

THE HYPE MASTERS

COMDEX. LAS VEGAS. Where sleight of hand meets glitz. Professional spinmasters work overtime to manufacture the impression that every shaky start-up and vaporware product is The Next Big Thing. This week, *Computerworld* senior editor Kim S. Nash looks past the glitter to figure out how hype happens. From industry schmoozefests to PR schemes to CEO cover stories, we shine a light on the black art of hype.

In Depth, page 91

MORE COMDEX/FALL '98 COVERAGE

DIRECT HIT. Satisfaction survey finds Dell and Gateway are tops in corporate PC users' hearts for quality and service. PAGE 81

SOUND THE ALARM. You can't hold back the handheld revolution. IT managers must strategize to support them. PAGE 135

DESKTOPS, DEVICES AND THE NET. Connecting you to all three, wherever you go — products aplenty at the show. PAGE 135

PAYING POSTAGE. E-mail free? Hah! Companies are starting to set up chargeback schemes to recover costs. PAGE 26

Thin clients breaking corporate barrier

By April Jacobs

FIRST HYPED, THEN DERIDED, server-centric thin clients are starting to catch on as once-wary users relax and start to make room for the technology. That's partly because of support from Microsoft Corp. and Intel Corp., as well as a steady stream of new offerings, some of which can be found this week at Comdex '98 in Las Vegas.

"I don't think [thin clients] are the silver bullet, but they have a place, and we are seeing good results with respect to stability, manageability and cost-effectiveness," said Steven Breaux, managing director of strategic systems planning and support at Federal Express Corp. in Memphis.

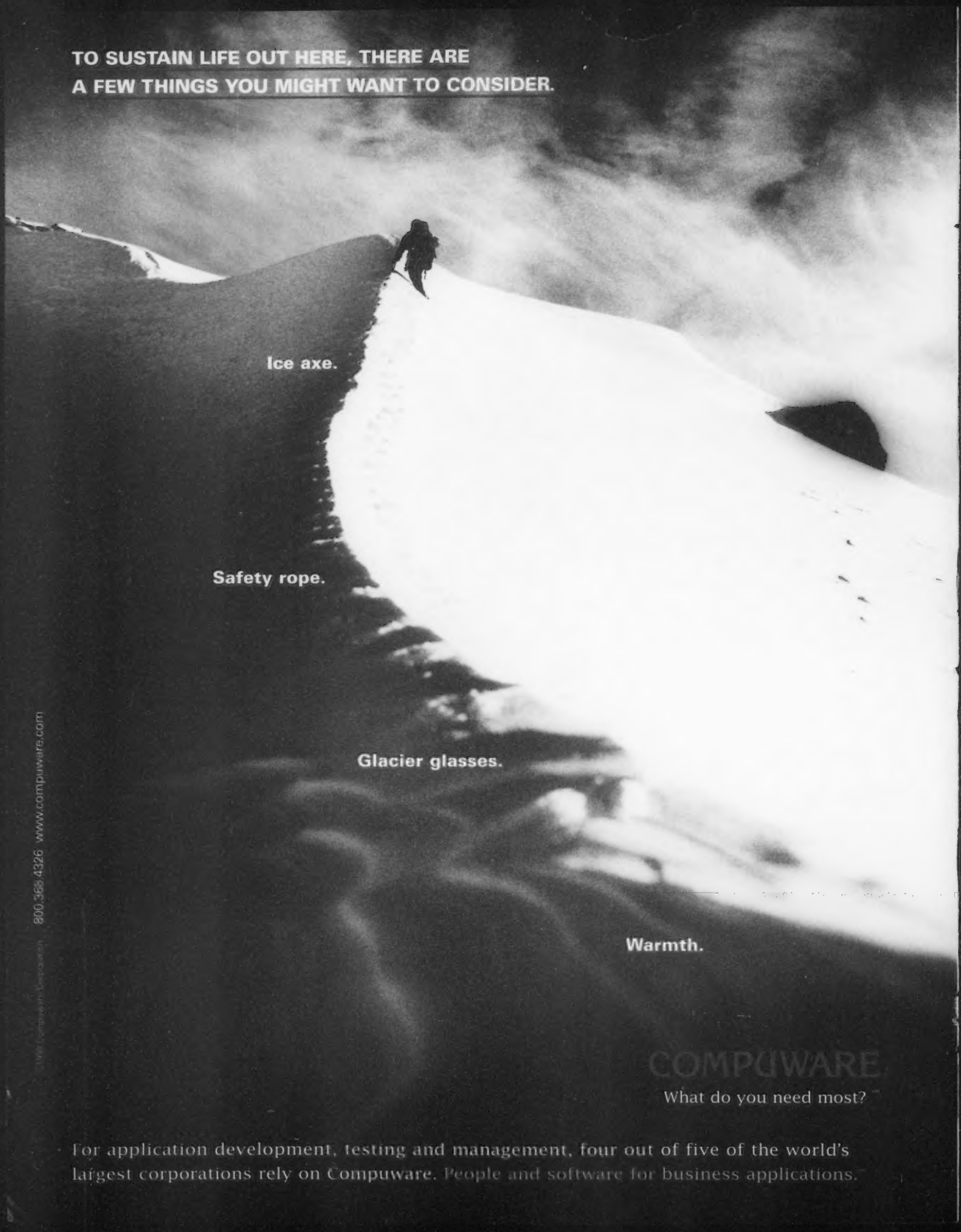
With that in mind, a once-waffling FedEx plans to roll out about 2,500 Windows-based terminals by May to run ground-based operations.

Breaux said the company chose thin clients over full-fledged PCs because pilot testing showed they were much easier to support than their complex PC counterparts.

The Bellagio Hotel will host

Thin clients, page 26

NEWSPAPER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"Train 'em, don't hire 'em!"

Desperate IT managers will train more to get and keep top skills, our Annual Skills Survey (page 97) reveals. And when they hire, here's what's in store:

- 20% salary boost paid for Baan skills; 17% for SAP and Oracle
- Cobol takes revenge as top language skill wanted
- Windows NT and NT server top operating system, LAN needs
- Year 2000 dominates system support concerns

Iris Rucker was a good data warehouse hire for Owens & Minor's Don Stoller because of her skill set

In this issue

NEWS

4 **Hurricane Mitch motivates** techies to head to Central America to help out in areas devastated by the storm.

6 **New cybercrime force fights** criminals it says are so slick, drug lords look stupid by comparison.

8 **Gates charges** that the government is in cahoots with Microsoft's enemies.

14 **Users voice** weak support for Java in Oracle 8i, predicting a slow migration from traditional languages.

16 **Now is the time to bargain** for low rates from telephone companies, as competition straps carriers.

OPINION

34 **Europeans protect** consumer privacy and won't deal with U.S. companies that don't, John Gantz warns.

76 **Women programmed** the first computer, but no one honored them until now, Kathleen Melymuka writes in Ms. MIS.

78 **Year 2000 problem offers** IT professionals an opportunity to help people in their communities, Ed Yourdon writes.

QUICKSTUDY

30 **Desktop Management Interface:** Helps IT support PCs, but not many products support it yet.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

39 **Software tracks** skills of staffers, not just job titles, to help users avoid duplicate hires and use techs more efficiently.

39 **Outsourcer assumes** burden of responding to customer E-mail from Web sites, promises better service.

INTERNET COMMERCE

43 **Customer service requires** better integration between sites and back-end applications.

43 **GM launches** E-commerce effort to sell dealerships equipment, not just parts.

THE ENTERPRISE NETWORK

51 **Architects build** collaboration sites online, easing chaotic tangle of project deadlines and contractor agreements.

51 **University lures** students with new services running on upgraded ATM network.

SOFTWARE

55 **App promises** to improve air traffic control, saving $800 million per year in fuel.

55 **Analytics put** cost/profit numbers on specific sales activities but require a change in decision-making processes.

SERVERS & PCs

59 **Data General ekes out** profitable quarter after a down year; customers are optimistic about its stability.

59 **IBM and HP ship** new high-availability Unix boxes for the uptime requirements of ERP, E-commerce needs.

DATA WAREHOUSING

67 **Utilities charge out** after new customers, using warehouses to identify them and find business opportunities.

FEATURES

MANAGING

75 **Windows versions confound** IT with rapid upgrades, but users find ways to keep current.

REVIEW CENTER

81 **Users name** Dell and Gateway tops in customer satisfaction survey, but not just because of price.

IN DEPTH

91 **Comdex brings out** worst in hype masters, who turn trade shows into carnivals.

IT CAREERS

106 **A new breed rises** through IT ranks, mixing tech skills with business savvy.

ETC.

Company index ____ 133
Editorial/Letters ____ 32
How to contact CW ____ 133
Inside Lines ____ 138
Stock Ticker ____ 131

EXECUTIVE Briefing

News summary for senior managers

■Most companies have decided training, not hiring, is the most reliable way to get the IT skills they need, according to our Annual Skills Survey. That gives techs with suboptimum skills a chance to work while they learn and keeps their employers from paying sky-high salaries for the hottest candidates. The survey shows that Internet skills, the ability to hook a database to a Web site and programming skills in the most popular languages remain at the top of the wanted list. Page 97

■A new class of IT worker is coming up the ranks. People with technical skills who also can spot a business opportunity may be the hottest managerial talent. Some analysts expect they'll take over so completely that IT won't be a separate department in a few years. Instead, it will be a part of every business group, with tech-savvy MBAs in charge. Page 106

■Hiring the right person is a challenge, but many organizations find that they're hiring new people to get skills they already have in-house. A new class of software is emerging that tracks skills and the workers with them much more tightly than traditional human resources systems can. Page 39

■The standard that governs what contract options are fair is being revamped, and the result could mean users pay more — lots more. Critics charge that the upcoming version of the Uniform Commercial Code releases vendors from liability for errors and lets them charge separately for software, maintenance and support. Lawyers want a standard set of interstate rules; users say they're the ones who would suffer. Page 1

■The 130-nation International Chamber of Commerce has established an electronic fraud task force to investigate outlaws so sophisticated they make the drug trade look simplistic. Money laundering and fraud are on the agenda, but so is education for users and law enforcement officers on cybercrime. Page 6

■Bugs abound in commercial software, but what really bugs users is that vendors aren't open about glitches and are sluggish to respond to problems. Reliability is improving, though, as vendors realize that quality sells. But software patches often fix one problem and create another, while increasingly complex software produces interoperability problems even between apps from the same vendor. Users turn to the press, subscription services and one another for information about bugs, but no single source is sufficient. Page 26

■The first programmers — the ones who programmed ENIAC while World War II still raged — were six female mathematicians hired from a group calculating ballistics trajectories for the U.S. Army. They could be bitter about being left out of IT history books, but for the most part they aren't, writes Kathleen Melymuka in Ms. MIS. They still take pride in their role as groundbreakers. Page 74

Online this week

COMDEX showcoverage

For the latest from Comdex/Fall '98, check out *Computerworld online* all week long.

COMPUTERWORLD
www.computerworld.com/more

Channel deal for the books

▸ *Barnes & Noble buy shows power of Net sales*

By Carol Sliwa

BARNES & NOBLE INC.'S acquisition of the nation's largest books distributor illustrates just how an Internet-driven decision can send shock waves through an industry — in both the electronic and the brick-and-mortar world.

After completing a planned $600 million purchase of Ingram Book Group in LaVergne, Tenn., Barnes & Noble estimated that more than 80% of its online and retail store customers will be within overnight delivery range of Ingram's 11 distribution centers.

The Barnes & Noble/Ingram deal represents a "classic example of how the consumer channel — especially wholesale and distribution — is changing in response to the technology capability and linkage created by the Web," said Stephen Biciocchi, a partner at CSC, a Cleveland-based retail consultant.

The same dynamic drives Internet-based moves in other consumer markets, from PCs to cosmetics to music CDs, analysts said. Indeed, Compaq Computer Corp. last week said it would open a direct sales Web site (see FAQ below).

Order fulfillment costs typically comprise a high percentage of the price of inexpensive items, Biciocchi noted. Now that consumers can buy products directly over the Internet, the impetus to make the supply chain between consumer and seller as "clean and neat as possible becomes overwhelming," he said.

> Last month, German publishing giant Bertelsmann AG bought a 50% stake in Barnes & Noble's Internet unit, barnesandnoble.com, for $200 million.

The neatness of the Barnes & Noble deal was evident to other book vendors. The leading online bookseller, Amazon.com Inc., now finds the distributor that filled 58% of its orders last year under the ownership of its archrival. "The overriding concern is that there's not preferential treatment," said Amazon.com spokesman Bill Curry.

ANTITRUST WOES?

And independent booksellers, already starting to feel the effects of online competition, are in a state of alarm. The American Booksellers Association, in an appeal to government regulators, called the Ingram acquisition "a devastating development that threatens the viability of competition in the book industry."

Barnes & Noble insisted that such concerns will be unfounded. Alan Kahn, the company's chief operating officer, said Ingram "will continue to provide as good service, if not better" and should be able to pass on "significant savings" to customers as a result of reduced costs for warehouse operations, logistics and freight.

Barnes & Noble has filed papers about the Ingram acquisition with the Federal Trade Commission. Given the magnitude of the acquisition, antitrust officials likely will review the merger, said Jennifer Rose, a U.S. Department of Justice spokeswoman.

Kate Delhagen, a retail analyst at Forrester Research Inc. in Cambridge, Mass., said Barnes & Noble had made "a very powerful strike" in its battle with Amazon.com.

"It gives Barnes & Noble instant traction — a very, very big distribution footprint and a lot of access to competitive information if the orders from Amazon still flow through the Ingram channel," Delhagen said.

Amazon.com certainly recognizes the need to address distribution costs. "We have had an ongoing strategy to diversify our supplier base, mostly by buying more books directly from publishers, and we expect that strategy to continue," Curry said. □

What Barnes & Noble gets:

Ingram Book Group
LaVergne, Tenn.

- Represents more than 9,600 publishers
- Stocks more than 370,000 titles
- Sells to retailers, booksellers and libraries
- Ships more than 115 million books, audio cassettes and multimedia CD-ROMs each year

Source: Ingram Book Group's Web site

& A North Carolina book distributor may be the merger's real winner. Page 131

FAQ: Compaq's direct sales initiative

Q: *What did Compaq announce last week?*
A: Compaq Computer Corp. launched a direct sales and marketing effort aimed at delivering build-to-order PCs, online purchasing and support services for small and midsize businesses.

Q: *But don't they do that already?*
A: Yes and no. Company officials have talked about selling direct and building made-to-order PCs, especially for larger customers. Last week's announcement mainly formalizes the strategy.

Q: *Why is Compaq turning to direct sales?*
A: To match the prices and configuration options that rivals such as Dell Computer Corp. and Gateway have been able to deliver by selling directly to customers instead of through distributors, dealers and resellers.

Q: *What are Compaq's biggest challenges in making this work?*
A: Channel conflict. The company has to find a way to convince its channel partners — which today account for almost all its sales — that direct sales won't mean a loss of business for them. Analysts believe the company has been hesitant to go openly direct in the past because of channel revolt.

Q: *So what is Compaq doing about it?*
A: Compaq is sweetening the deal for resellers by offering incentives for pass-along sales leads. Resellers are also expected to be more involved in assembling computers for Compaq.

— Jaikumar Vijayan

IT lends skills to Nicaragua crisis

By Sharon Machlis

WHEN HELP DESK administrator Pete Sequeira heard of the devastation wrought by Hurricane Mitch in his father's homeland of Nicaragua, he immediately requested family leave so he could fly down and try to help.

What he didn't expect was that his boss, Ronin Corp. CIO Bob McCracken, and several colleagues would want to go, too. "We felt we had to do something instead of sitting around," McCracken said.

On Friday, four people from the firm's information technology department were scheduled to fly to Managua to begin assessment work for creating networks and databases that will help track missing people, medicine inventories and outbreaks of disease. The Ronin team also may seek donations of satellite time to help restore communications in now-isolated areas.

"At the moment, we don't know what we need," McCracken said. "I am going to be down there seven days [to find out]."

An estimated 4,000 people were killed in Nicaragua and 800,000 were made homeless after a week of torrential rains that started Oct. 27 and peaked at 4 inches per hour. Overall, it's believed the storm killed 11,000 people across Central America. Many areas are cut off from aid because roads and bridges were washed out; thousands of people desperately need food, water and medicine. It's feared that epidemics of cholera, dengue and other diseases could break out.

Dr. Petro A. Sequeira, Pete's father, said he hopes a computer network can be installed in hospitals and other medical centers to track medicine inventories and blood donations and that a special database will assist survivors in finding one another.

"I think a program will help to trace these people because they have been moved from one refuge to another," said Dr. Sequeira, who lived and worked in the U.S. for many years but returned to Leon, Nicaragua, in 1992 to run a medical clinic.

He has been in contact with officials at the Nicaragua Ministry of Health and the Red Cross in launching the project.

THE ASSOCIATED PRESS

Hurricane Mitch devastated Nicaragua, leaving survivors such as these to rebuild their lives and homes

His U.S.-born son said he wants to return to help his family, as he still has relatives in affected areas. "Any little bit I can do. I don't want to be a bystander," said Pete Sequeira. "As long as I am there. . . . It's nice to have support from people in my own company."

Ronin, a technology market research company, is arranging for other IT coverage while the four are in Nicaragua, possibly from the Princeton, N.J., company's London office. Sequeira said he plans to stay longer than the rest, taking unpaid leave. But he will have a cellular phone with him so he can be reached in an emergency.

"I will be traipsing through the jungles of Nicaragua," he said, "and somebody [may call needing] a reinstallation of Windows." □

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New global team aims to thwart cybercrime wave

▸ *Learning from past attacks is prevention key*

By Sharon Gaudin
LONDON

GETTING ROBBED or duped over the Internet is just a matter of time for most companies.

And most don't even know how to begin to fight the battles in front of them, according to security consultants and private investigators at the 15th annual World Conference on Computer Security here last week.

The problem is that information on how companies are being hit and the latest trends in online crime just isn't available.

But the new Cyber Crime Unit under the global umbrella of the International Chamber of Commerce (ICC) has some industry watchers hoping that could all change.

"The trade in information makes the drug trade look stupid," said John Austen at Computer Crime Consultants Ltd. in London. "They don't carry guns, and they don't have broken noses. The people attacking your system or defrauding you are probably accountants. It's laundering money online. It's fraud. Gathering information is the new crime."

And the lack of information about those crimes is what's making companies more vulnerable to attack.

Worldwide Internet security market

1996	$1 million
2001	$7 billion*

*Projected

Source: Datamonitor, London

"Companies have security attacks, but they don't want to say they had this embarrassing problem," said Ken Lindup, a consultant at SRI International, a Menlo Park, Calif.-based consultancy. "We need to learn from these attacks. How to plan. How to assess risks and take action. We need information — or how can we win?"

Eric Ellen, chief executive of the ICC's Commercial Crime Services and head of the new Cyber Crime Bureau, said he's putting together a team to dog that very information trail.

"Nobody knows the full extent of the problem," said Ellen, who helped get approval for the formation of the Cyber Crime Bureau in Geneva a little more than a month ago. "We try to keep our members from getting robbed, whether it's fraud or misrepresentation of product or theft."

KEEPING TRACK

Ellen said he's building a global team of crime watchers who will track which companies are getting hit, what problem or weakness was exploited and how the gaps were plugged. He said the program will get on its feet in a few months. The ICC has members in about 130 countries.

"Governments aren't doing a good job of handling this, and most law enforcement agencies, like Scotland Yard, just don't have the expertise," Ellen said. "And most companies are just looking at hacking. There's money laundering, pyramid schemes, fraudulent ventures. It's all online."

"Computer viruses are easy to see," said Paul G. Dorey, director of Barclays Bank PLC in London. "The bigger crimes are harder to detect. And the past is a bad prediction of the future because we're looking at new technology and new crime. What's starting to happen? That's what we need to know."□

IBM, Oracle hop on XML bandwagon

By Carol Sliwa
and David Orenstein

MICROSOFT CORP. has led the Extensible Markup Language (XML) charge for a long time. Now other heavy hitters are jumping on the bandwagon, as corporate users catch on to the new language that can help them format, organize and manage data they want to expose on the Web.

IBM Monday planned to publicly assert its intention to "embrace" XML — on the heels of last week's similar announcement from Oracle Corp.

"We see it as the final pillar of the foundation technology for E-business [after] TCP/IP, the browser and Java," said Simon Phipps, IBM's Java evangelist.

"One of the major benefits of the Web for corporations has been to optimize their supply chain. You connect various participants in a business process through a common network. Up until now, that network hasn't supported the transfer [of] or access to data very well. XML makes that possible," said Phil Costa, an analyst at Giga Information Group in Cambridge, Mass.

IBM'S PLANS

At this week's XML '98 conference in Chicago, IBM plans to do the following:

- Launch an XML Web site portal (*www.ibm.com/xml*) with product information, education materials and links to development resources.
- Demonstrate the Precision Graphics Markup Language — with PGML's creator, Adobe Systems Inc. — that can help companies publish graphics through an XML data stream.
- Unveil a broad range of XML technologies that it will preview on its AlphaWorks Web site.

XML IN ORACLE

Last week at Oracle OpenWorld in San Francisco (see story, page 14), Oracle announced plans to support XML in a variety of products, including its Oracle 8i database.

Oracle 8i's embedded file system will use XML to extract data from word processing, E-mail and other documents where data is not relational.

Also on the product front, Object Design Inc. Monday at the XML '98 conference plans to unveil its new Excelon data server that can cache and deliver XML information to enterprise applications and Web servers and help corporate users manage XML data.

The Excelon data server is scheduled to ship by March for $15,000 to $20,000 per unit, Object Design officials said.

In standards-related news, Oracle, IBM and Unisys Corp. last week demonstrated an XML-based technology that lets users of competing and currently incompatible component modeling and repository tools exchange data about application development projects over the Internet.

In January, the Object Management Group will vote on whether to adopt the three companies' XML Metadata Interchange (XMI) format as a new standard.□

MOREONLINE

For XML resources, white papers and specifications, visit *Computerworld online.*
www.computerworld.com/more

Companies struggle to answer Web-site E-mail

By Roberta Fusaro

CORPORATE WEB site managers are learning how to handle the unexpected flood of customer E-mail generated by their Web sites.

But a survey released last week indicates they could be doing more.

Atlanta-based Coca-Cola Co., for example, has been struggling to keep up with customer-service E-mail, admitted Kari Bjorhus, a marketing manager at the soft-drink maker.

"I don't think we anticipated the volume," she said. The company has about five customer-service representatives fielding between 2,000 and 2,500 E-mail inquiries each month. "We have been shooting for [issuing a response in] 24 hours. We don't always make that," Bjorhus said.

But the company in the next two weeks will unveil a revamped Web site that will include a more visible and searchable frequently-asked-questions (FAQ) area.

Coca-Cola also has formed a committee that will meet every six weeks to discuss Web site issues. Updates for the FAQ section may be suggested at those meetings, Bjorhus said.

"Most companies don't have the infrastructure in place to respond to the barrage of E-mail their Web sites can generate," said Ken Allard, an analyst at Jupiter Communications Inc. in New York.

The research firm sent blind queries to 25 of the highest-traffic Fortune 500 Web sites in retail, finance, content, consumer and travel categories and waited for a response. Jupiter found that 40 of the Web sites took longer than five days to reply to the E-mail, never replied or weren't accessible by E-mail, according to the report issued last week.

Donna Fluss, a research manager at Gartner Group Inc. in Stamford, Conn., said many companies actually motivate their customers to flood them with E-mail by not providing enough information on the Web site.

Moreover, E-mail plays on the consumer need for instant gratification. "Customers want to communicate [with a company] when and how they want to, and they have too many other choices," she said.

Analysts said companies can turn to E-mail response management systems that route and track E-mail through an organization or that employ case-based reasoning to a customer query and can send back automated responses. Vendors include Genesys Telecommunications Laboratories Inc., EGain Inc., Mustang Software Inc., Aptex Software Inc. and Brightware Inc.□

Basic functions of E-mail management products:

Response management: Manages and tracks E-mail messages from arrival through response

Content management: Searches E-mail content for keywords and automatically prepares a response

Contact tracking: Creates leads and customer service records that can maximize future sales

Source: Gartner Group Inc., Stamford, Conn.

A company builds a business around answering your Web site's E-mail. Page 39

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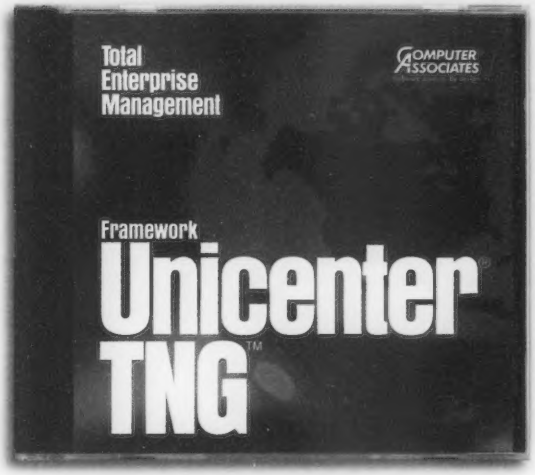

The Framework, in conjunction with Unicenter TNG, the world-class enterprise management solution, brings you a completely extensible infrastructure with more than 50 additional management functions.

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Unicenter TNG is the most open, interoperable and scalable management solution available. It has been supported by virtually every major hardware and software company, including Microsoft, Sun, SAP, Intel, HP, DIGITAL, Tandem, NCR, SGI, and Data General. Peter Kastner from the Aberdeen Group recently summed it up when he said, "Aberdeen positions the Framework as the enterprise management entry-level user choice and *de facto* ISV platform choice."

	# Of Developers	Develop Time (mos.)	Person Mos.	With TNG Framework
2-D and 3-D User Interface	5	8	40	Available Now
Object Repository	8	12	96	Available Now
Auto Discovery	6	9	54	Available Now
Calendar Management	5	8	40	Available Now
Virus Detection	3	7	21	Available Now
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Wireless venture targets mobile users

By Matt Hamblen

NETWORK MANAGERS said a Microsoft/Qualcomm wireless network access business could work in corporate settings — if it can be guaranteed to be secure and reliable.

The comments came after the formal launch of WirelessKnowledge LLC, a joint Microsoft Corp./Qualcomm Inc. venture designed to bring corporate data access to mobile end users via wireless networks (CW, Nov. 9).

Network managers said they are leery of wireless data transport because it's immature technology that poses security problems.

Yet some conceded that Microsoft's entry into the wireless service field means that wireless access to E-mail and other data could be an adjunct of their networks in the next two years.

Worldwide projected wireless data market

	Users	Revenue
1998	2.2M	$1.1B
2002	12M	$5.6B

Source: The Yankee Group, Boston

WirelessKnowledge has set up a network operations center in San Diego (also Qualcomm's base), where nine major wireless carriers are slated to provide security and other services for remote workers who use handhelds, laptops, pagers and cellular phones to retrieve data from their company servers and the Web.

Officials for the venture said software at the San Diego center will add a security layer to that already offered by the carriers and will allow the proper interface between a company's server-based data and any size mobile device using any of several wireless standards. Trials will begin in January.

Network professionals said the high profile of Microsoft in the computer industry could prompt them to look at the wireless service. But not right away.

"Frame-relay networks are so cheap that I don't see a great application for wireless in the financial services area we're in," said Michael Foutes, a senior security specialist at The CIT Group Inc. in Livingston, N.J.

Alex Hu, assistant vice president of information technology at The Chase Manhattan Bank Corp. in New York, said security was a major barrier. "Banks are so preoccupied with security that if we wanted to run data over wireless, we'd set up our own network ourselves," he said.

Users said the real estate and medical fields could probably benefit because they have users who need to access relatively noncritical data such as access to personal calendars.

"I do believe managers should look at wireless as an alternative for anything nonmission-critical, but [there are] questions about security on wireless that doesn't apply on the land-line networks," said Matthew O'Brien, past president of the Communications Managers Association, a user group.

O'Brien is now manager of provisioning at Icon Corp. in Weehawken, N.J., an Internet services company.

"There's already a lot of interest in wireless by end users, but it's not possible to implement it right now without consistent wireless standards and security," said Ellen Van Cleve, director of data communications at *The New York Times*, which has 2,000 remote users in foreign countries.

J. Gerry Purdy, an analyst at Mobile Insights Inc. in Mountain View, Calif., said the involvement of major wireless carriers will help the new venture, although WirelessKnowledge isn't a guaranteed hit. □

MOREONLINE

For links to publications, organizations and resources on wireless technology, visit *Computerworld online.*

www.computerworld.com/more

Intel evidence paints 'arrogant' Gates

▸ *McGeady alleges a 'terrifying' threat*

By Patrick Thibodeau

THE CHARGES lodged by Intel Corp. Vice President Steven McGeady at the *U.S. vs. Microsoft* antitrust trial last week were, in many respects, similar to those of earlier witnesses. But there was one big difference.

Chip maker Intel is known as the other half of the so-called Wintel alliance with Microsoft Corp. The software and hardware products made by the two companies run on roughly 90% of all desktops. That partnership produced a level of candor among Wintel executives not evident in earlier testimony from Netscape Communications Corp. or Apple Computer Inc. And that has helped the government with a key part of its legal strategy — to attack the credibility of Microsoft Chairman and CEO Bill Gates.

In a high-level private meeting between Intel and Microsoft officials in July 1995, McGeady took 15 pages of notes, titled "Gates Unplugged," that the government introduced into evidence. He quoted Gates as saying "This anti-trust thing will blow over," and "We haven't changed our business practices at all." The remarks were made one year after Microsoft and the Department of Justice signed a consent decree that required Microsoft to stop charging equipment makers a blanket royalty on all PCs sold, even if the machines weren't bundled with Windows.

Legal experts said the comments in McGeady's notes could influence Judge Thomas Penfield Jackson. "One of the attributes that is associated with a monopolist is power, and power is often associated with arrogance," said Jesse Markham, an attorney at Jackson, Tufts, Cole & Black LLP in San Francisco. "If you are the government, you try to emphasize those kinds of associations in the mind of thejudge."

Justice Department attorneys said McGeady's allegations fit the pattern of threats and bullying that a series of other Microsoft competitors already have testified to in the 4-week-old trial. McGeady alleged that an enraged Gates made a "credible and fairly terrifying" threat in 1995 not to support Intel's then-new MMX multimedia chip technology unless Intel stopped its multimedia software development of native signal processing (NSP).

NSP is software that sits below the Windows operating system and allows multimedia applications to interact directly with a PC's hardware, speeding performance. Microsoft made it clear that it "owned software to the metal — they felt they had control of all the software above the hardware," McGeady said in court. Microsoft also pressured Intel not to work with Sun Microsystems Inc. on Java, he said.

Gates' reaction shouldn't be surprising, said Rob Enderle, an analyst at Giga Information Group in Cambridge, Mass. Imagine Intel Chairman and CEO Andy Grove's reaction if Microsoft had launched a microprocessor design unit: He "would have probably been in Bill's face within 24 minutes," he said.

Microsoft countered the testimony of McGeady on a number of fronts, citing, for example, the Federal Trade Commission's pending antitrust case against Intel to make a point about the competitive nature of the industry. It also showed videotaped comments from McGeady's boss, Ron Whittier, that seemingly contradicted McGeady's explanation of why Intel stopped its NSP development.

The "Gates Unplugged" memo also quoted Gates as saying Microsoft may change its E-mail policies. But Microsoft spokesman Mark Murray said policies haven't been changed and that the company has turned over "several million" documents to the government.

Marc Schildkraut, who led an early 1990s Federal Trade Commission investigation into Microsoft and is now an antitrust attorney at Howrey & Simon in Washington, said the government's efforts to establish a pattern of anticompetitive behavior have been unfocused. □

MOREONLINE

For complete coverage on Microsoft and the Justice Department from 1994 to the present, visit *Computerworld online.*

www.computerworld.com/more

Microsoft CEO tells shareholders DOJ is creating 'false impression'

The government is biased against Microsoft, CEO Bill Gates not surprisingly said at a company shareholders meeting last week.

"You can't help but wonder when you hear about the private breakfast meetings and private dinners on an ongoing basis between the government's lawyers and Microsoft's competitors," Gates said, referring, for example, to a breakfast at the home of Netscape Chief Executive Officer James Barksdale with the Justice Department's lead prosecutor several months before the trial began.

"As our witnesses come forward, you will see that the facts simply don't support the government's claims," he said. "People will be surprised to see how the DOJ [Department of Justice] has misused E-mail snippets to create a false impression."

Eight of 12 government witnesses remain before Microsoft starts calling its own witnesses.

He ended prepared remarks by thanking shareholders for their "support and trust . . . through all these exciting times." — Kim S. Nash

Intel VP lets the chips fall where they may

Judge Thomas Penfield Jackson asked Intel Vice President Steven McGeady, who completed his testimony Thursday, if his views had the "blessing" of his company. "Blessing would be a strong word," McGeady said. He said there would be both agreement and disagreement in the company on his testimony. Intel spokesman Chuck Mulloy echoed that and said McGeady "was testifying to events as he knew them."

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Nortel policy networks to use Novell directory

▸ *Software promises more control of network traffic, costs*

By Bob Wallace

NORTEL NETWORKS last week announced that it will include Novell Inc.'s directory with its policy networking package, an offering designed to give information technology managers sorely needed control of network resources while reducing operations costs.

Novell Directory Services (NDS) is the missing piece that will enable Nortel Networks (formerly Bay Networks Inc.) to offer a complete policy network package, which lets IT managers prioritize traffic by application and set access rights on a per-employee basis. Dubbed Optivity Policy Services, the Nortel software is scheduled to ship in the second quarter of next year.

Novell also appears close to landing more NDS licensees, which means users could expect several complete policy networking packages to be launched early next year.

Cabletron Systems Inc. confirmed that it's in negotiations to license NDS and plans to jointly develop products with Novell. And Ascend Communications Inc. confirmed that it's in talks to license NDS, but it wouldn't elaborate.

The directory, akin to a phone book, is central to policy networking as it lets IT staffers link names and services to policies, which are instructions to the network that determine which resources users can access and which application's traffic gets top priority for limited bandwidth.

NOVELL PUSHES NDS

Definition: Novell Directory Services is a cross-platform infrastructure for managing, securing, accessing and developing major components of a network

NDS competes against: Microsoft Corp.'s Active Directory

Licensees: Lucent Technologies Inc. (October), Nortel Networks (November)

Non-networking licensees: PeopleSoft Inc. and Oracle Corp.

"People want to lay the groundwork to support policy networking, but they have to wait until all the pieces come together and are working first," said Esmerelda Silva, an analyst at International Data Corp., a Framingham, Mass., research firm and a sister company to *Computerworld*.

THE SIMPLE LIFE

One large Nortel user said he sees the benefit of the directory addition.

"It portends to make life a whole lot easier by addressing the issues of tracking moves and [user] identification," said Chris Horrocks, CIO at debt-collector Consumer Financial Services Inc. in Tulsa, Okla.

Nortel Networks officials noted that they are working with Microsoft to offer a policy network package that includes the long-awaited Active Directory but didn't say when that will be available

Nortel Networks archrival Cisco Systems Inc. cast its lot with Microsoft's Active Directory, which isn't due to ship until the middle of next year, and Cisco has yet to announce any similar deals with Novell. The Nortel win is the second in a month for Novell, which landed Lucent Technologies Inc. in October.

And Novell isn't stopping there. A Novell official said the company has contacted Cisco and 3Com Corp. about NDS licensing opportunities, but wouldn't say if either has expressed interest. □

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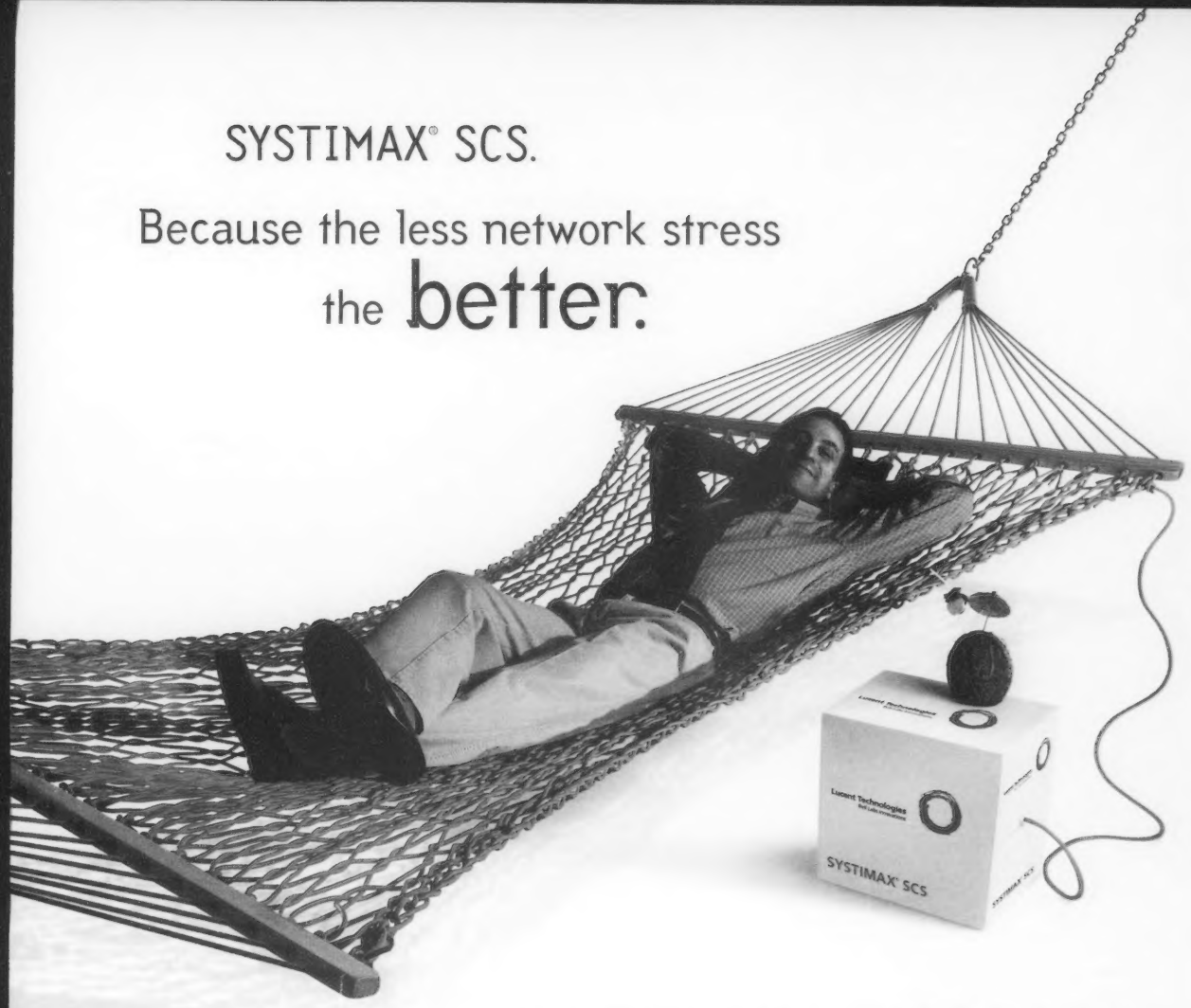

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FRANKLY SPEAKING

Age bias an IT reality

FRANK HAYES

IS THERE age discrimination in IT? Sure. But then, you already know that if you're in your 40s or 50s and working in information technology.

Oh, some industry blowhards and deep thinkers will dance around the issue, rejigger their definitions and come up with a million ways of explaining how, gee, it's just a coincidence that somehow middle-age IT professionals so often lose out in a job hunt to kids in their 20s.

But the statistics don't leave much doubt. Unemployment among IT workers older than 50 is 17%, according to the U.S. Census Bureau. That compares with about 3% unemployment for most workers that age and less than 5% for the population at large.

That's too big a gap to be explained away by bad luck or happenstance. It's bias. Put simply, lots of IT managers believe that if you're over 40, you've got a 20-year handicap compared with programmers, network administrators and help desk workers just out of school.

Younger IT workers have fresher, sharper technical skills than middle-age IT people, or so the justification goes. Younger workers have the energy to put in longer days. Younger workers aren't distracted by having social lives and families.

Turn that 20-year handicap into a 20-year advantage.

Some of those arguments are bogus. Lots of older programmers and network managers keep up with the state of the art. That's not an option — it's a requirement for technology workers at any age. If you don't understand all the technology options, you can't map technology to business needs.

But some of those justifications are, well, justified. True enough, lots of older programmers don't have the stamina — or the digestion — to work round-the-clock shifts while living on pizza, Jolt and Chee-tos. And they don't want to. They *do* have marriages and kids and lives outside their cubicles.

In other words, they're not 23 anymore. And the dirty little politically incorrect secret every hiring manager knows is that when middle-age IT workers try to race against people 20 years younger, they're just not likely to keep up.

So if you fall within that category — if you feel as if you're getting kicked around for being 20 years too old — you'd better start turning that 20-year handicap into a 20-year advantage. After all, you've got some things those wet-behind-the-ears college graduates don't have: battle scars. War stories. And lots of real-world experience.

You've already learned — the hard way — what goes wrong with IT projects. You know what users don't tell the IT department. You know the realities of corporate politics.

You've already made more bad decisions, picked more wrong products and sprinted down more technological blind alleys than those energetic kids can imagine. You've survived those failures, and if you're smart, you've learned from them. Maybe you can't pick your way safely through every IT minefield, but at least you've got a chance of making it through without every other step blowing up in your face.

But do you think that's all you need to beat age bias? Think again. Knowing isn't enough — you've got to start doing. Upgrade your personal skills along with your technical background. Find new ways to pry needs and ideas out of users. Spend face-time with business-side managers — make sure you know what they need, and make sure they know you.

Don't let yourself be pegged as 20 years behind. Pitch yourself as 20 years ahead of the game. With that edge, you offer real value that can't be matched by any 20-something technology whiz.

There's not a lot you can do to reverse age bias. But there's a good chance you can keep from becoming a statistic. □

Hayes is Computerworld*'s staff columnist. His Internet address is frank_hayes@cw.com.*

SHORTS

Microsoft Net head moves on

The head of Microsoft Corp.'s unprofitable Internet products group said he plans to take a leave of at least six months. Pete Higgins, a 15-year veteran of Microsoft, will quit in January as group vice president of the Internet Media unit. No replacement has been named. His departure follows last month's relaunch of The Microsoft Network as a consolidated host of Microsoft's online properties.

Most CIOs in flux, study says

A study to be released this week by executive search firm Korn/Ferry International and the *Financial Times* in London shows that the CIO's role is evolving from technical leader to strategic planner. Of the 150 U.S. CIOs surveyed, 65% said their role is in flux. Not all CIOs are finding it easy to transition to a business-focused role. According to the study, only 43% of CIOs interact with the CEO more than once each month, and a slight majority — 51% — don't sit on the company's board.

Oracle buys Concentra

Oracle Corp. announced last week that it would acquire Concentra Corp. — a Burlington, Mass.-based developer of configuration software — for approximately $43 million. Configuration software lets users customize quotes and orders. Concentra's SellingPoint software will still be available as a stand-alone product and will be integrated into Oracle's applications.

Dell profits up; Intel bullish

Dell Computer Corp. revenue grew 51% for the third quarter, ended Sept. 30. The PC maker said net income rose 55% to $384 million from the same period last year. Round Rock, Texas-based Dell said its online sales surpassed $10 million per day. Meanwhile, Intel Corp. issued a market forecast indicating that stronger-than-expected demand for PCs will cause its revenue to exceed expectations in this year's fourth quarter.

Consumer demand rages

The number of people thinking of buying PCs is up nearly 50% compared with last year at this time, according to a survey of 2,000 households completed this month by MarketMaps LLC of New Canaan, Conn., and Philadelphia-based Centris. Reasons cited were lower prices, the desire to support their children's education, the urge to get online and professional needs. U.S. consumers were expected to buy 5 million PCs between Nov. 1, 1998, and Jan. 31, 1999.

Netscape moves ahead

Netscape Communications Corp. last week announced its next-generation technology, code-named NGT, which will form the foundation for its future client products. NGT includes a new layout engine that the company said will improve the efficiency of displaying Web content and support the latest standards. Company officials said NGT will lead to smaller and faster browsers and other clients.

Complaint filed against lawyer

The Federal Election Commission has received a complaint against David Boies, the government's lead trial counsel in the U.S. vs. Microsoft Corp. antitrust lawsuit. The complaint alleges a campaign finance law violation during Rep. Jane Harman (D-California) election bid two years ago. The FEC would not comment, but Boies has "denied any kind of wrongdoing, and he assures us that they are completely without merit," said Justice spokeswoman Gina Talamona. "This in no way will affect our case against Microsoft," she said.

SHORT TAKES The second public beta of Notes 5.0 will be posted next week at **Lotus Development Corp.**'s Web site (*www.lotus.com*), the Cambridge, Mass., company said. . . . **AT&T Corp.** said it will begin selling international voice, data and Internet Protocol services using the AT&T Concert name, letting companies connect to 100 cities on an IP network. . . . **GeoCities** said it was paying $2 million in cash plus stock for **Starseed Inc.**, the Ashland, Ore., creator of a site called WebRing, which indexes and groups consumers' home pages based on various common subjects. WebRing has 66,000 groups and more than 900,000 members. . . . **3Com Corp.** said it's bundling **White Pine Software Inc.**'s CU-SeeMe videoconferencing client software with its Bigpicture video phones. . . . **The Washington Post** and **Newsweek** launched Marketplace, an Internet shopping information venture to let users comparison-shop for retail products.

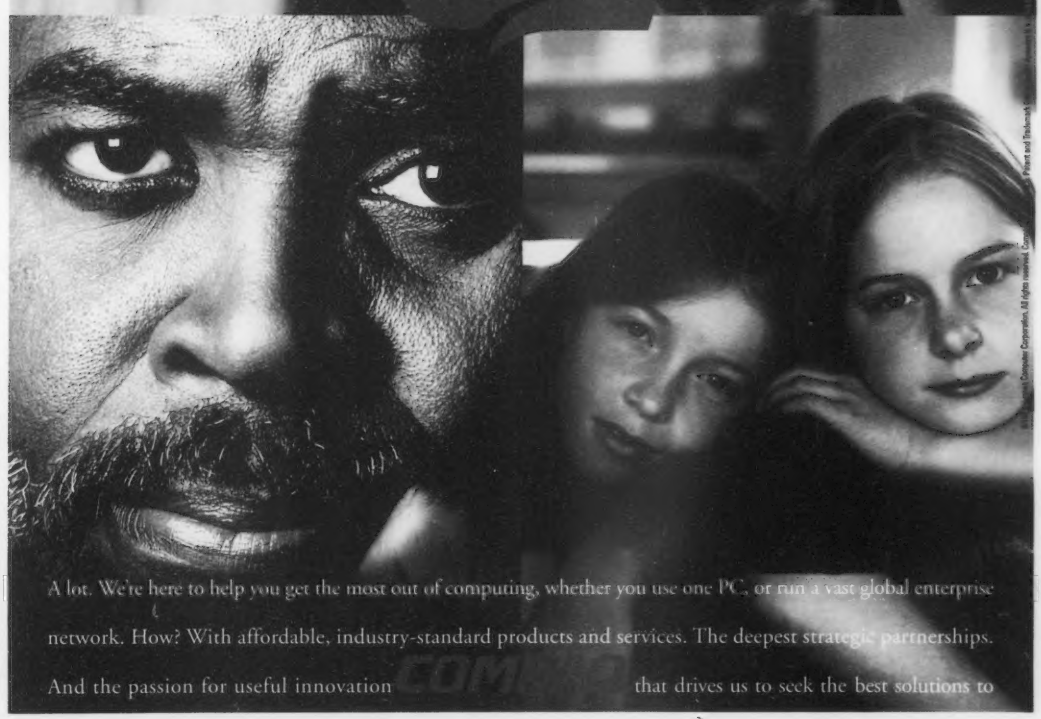
CONTRACT OF THE WEEK

Customer: NASA

Contractor: IBM Global Services, Somers, N.Y.

Terms: $55 million, three years

Highlights: IBM will furnish desktop PC and server support services, including remote networking and help desk support, to 25,000 end users at NASA centers in Florida, Texas, Mississippi and Alabama. The deal is part of a larger, $159 million contract awarded to OAO Corp., a Greenbelt, Md.-based systems integrator.



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Ready for Oracle Java? . . .

▸ *Object-oriented database may be leading, not meeting, market demand*

By David Orenstein
SAN FRANCISCO

THE NEW Oracle8i database is a Java server with support for 10,000 concurrent users, a fast Java virtual machine and a framework for components such as Enterprise Java Beans — but that didn't matter much to many developers at Oracle OpenWorld '98 here last week.

Many developers in Oracle Corp. environments are accustomed to Oracle's PL/SQL rather than object-oriented Java, said Mitch Kramer, an analyst at Patricia Seybold Group Inc. in Boston. Oracle8i is leading rather than meeting market demand, he said. "I don't think there is plenty of Java code waiting around for a database to integrate into."

Hartford Life Inc. plans to move some projects to Oracle8i. Features such as Java-stored procedures are welcome improvements, said Jeff Oakes, a corporate object designer at the insurer in Hartford, Conn.

Oracle8i should help Oakes make the next version of a pension-management application work with thinner clients, he said. A major thrust of Oracle8i is to encourage development for thin clients, which can be less difficult and costly to maintain, said Oracle Chairman and CEO Larry Ellison.

But Oakes said many Oracle developers he has spoken to don't yet grasp Oracle8i's potential. "I think it will grow on the Oracle community gradually," he said.

Erich Nitz, principal engineer at Goodyear Tire & Rubber Co. in Akron, Ohio, said he's learning about Java, but the tire maker's plant automation and process control applications generally are written in PL/SQL and C or C++. Nitz said he has been wary of Java because of the cost to switch to it and because of the battle between Microsoft Corp. and Sun Microsystems Inc.

Likewise, Gerry Shillabeer, senior software engineer at Alberta Blue Cross in Edmonton, said the health insurer's developers have plenty to do while Java evolves. "We're in no hurry. We're not convinced [Java] is truly the way to go," he said.

The best part of Oracle's embrace of Java isn't the capabilities of Oracle8i, said Java user Bill Blackwell, a systems architect at Lockheed Martin Corp. in Fairfax, Va. Instead, the top advantage is that Oracle8i will move Oracle away from its proprietary PL/SQL language to a standard one, Java, supported by many environments.

Neither Lockheed nor its consulting customers have homogeneous Oracle environments, Blackwell said. "The thing that many customers stick me with every time is that Oracle [PL/SQL] has proprietary extensions," he added. □

Features of Oracle's 8i database and JDeveloper 2.0

Oracle 8i	JDeveloper 2.0
• A fast Java virtual machine with low memory usage	• Support for servlets creation
• Object-relational structure	• Enterprise JavaBean development and deployment wizards
• Java stored procedures	• SQLJ translator
• Enterprise JavaBean framework	• Support for writing, debugging and deploying code on all tiers
• Object request broker	

. . . 'No, we're not,' users say

By Stewart Deck
SAN FRANCISCO

THOUGH Oracle Corp. officials talked up the release of the company's Internet-centric Oracle8i database at last week's Oracle OpenWorld '98 event here — and analysts said the database was a significant technological step forward — almost half of Oracle's users still haven't upgraded to the company's Oracle8 release. And they're in no hurry to do so.

A recent International Oracle Users Group-Americas survey that showed that close to half of Oracle's users still are running Oracle database versions that are even older than the 16-month-old Oracle8. Oracle President Ray Lane said in OpenWorld's opening address that such results indicated Oracle needed to pay more attention to its established users, and he pledged to do so.

Tom Witmer, information systems director at the North Arundel Hospital in Glen Burnie, Md., is one of those established users. Just three weeks ago, he finished upgrading the hospital's information technology systems to Oracle 8.04. Witmer said the Oracle8i release sounded like "a great concept," but he added that he has no plans to implement it anytime soon.

JEFFERSON STEELE

North Arundel Hospital IS director Tom Witmer says that Oracle8i sounds great but that he's happy with 8.04 and doesn't want to tackle an upgrade soon

"Upgrading is such an undertaking that takes so much time and expertise," Witmer said. "We're very pleased with what we have now."

Although OpenWorld was billed as the official release of the Oracle8i database, even Oracle Chairman and CEO Larry Ellison acknowledged that this was its third official rollout in the past two months [CW, Sept. 7] and may be followed by at least two more official unveilings.

Coupling its application server and a new Internet file system with the database makes 8i a more flexible platform than a database, said Frank Gillet, an analyst at Forrester Research Inc. in Cambridge, Mass. Larry Chen, chief technology officer at Oracle8i beta-tester BidCom Inc. in San Francisco, said the new release makes the tasks of administration and replication much easier.

BidCom coordinates construction projects using an Internet-based system based on Oracle8i. Its latest partitioning features let BidCom run "thousands of projects at the same time on our systems," Chen said. □

Low-cost SQL Server 7 takes aim at low end

By Stewart Deck

THE FINAL piece of Microsoft Corp.'s SQL Server 7.0 database puzzle popped into place last week: the price tag.

When the database is finally unveiled this week at Comdex/Fall '98 in Las Vegas, pricing will start at less than $280 per user for the standard edition (designed for departments and workgroups) and $320 per user for the enterprise edition (see chart). A new mobile version — SQL Server Desktop — will be included along with the standard and enterprise editions and will be priced per access seat.

SQL Server 7.0 will be generally available within 30 days, company officials said.

PRICING PRESSURE?

Industry observers said those prices could cause database competitors to cut their traditionally higher prices, but Oracle Corp., for one, denied that. "We have pricing levels that work, and our market share numbers speak for themselves," said David Menninger, vice president of online analytical processing (OLAP) product marketing at Oracle.

Analysts said Microsoft's SQL Server 7.0 is aimed at capturing the lower end of the Windows NT database market, and several beta testers said it suits their needs well.

"Microsoft's low prices are intended to drive the competition out of this low-end market," said Herb Edelstein, an analyst at Two Crows Corp. in Potomac, Md. "But even with all its new features, it's unlikely that [SQL Server 7.0] will solve more than a fraction of what users need on the large enterprise level."

Microsoft has beefed up the release with data transformation services as well as data warehousing support through a new component called OLAP Services.

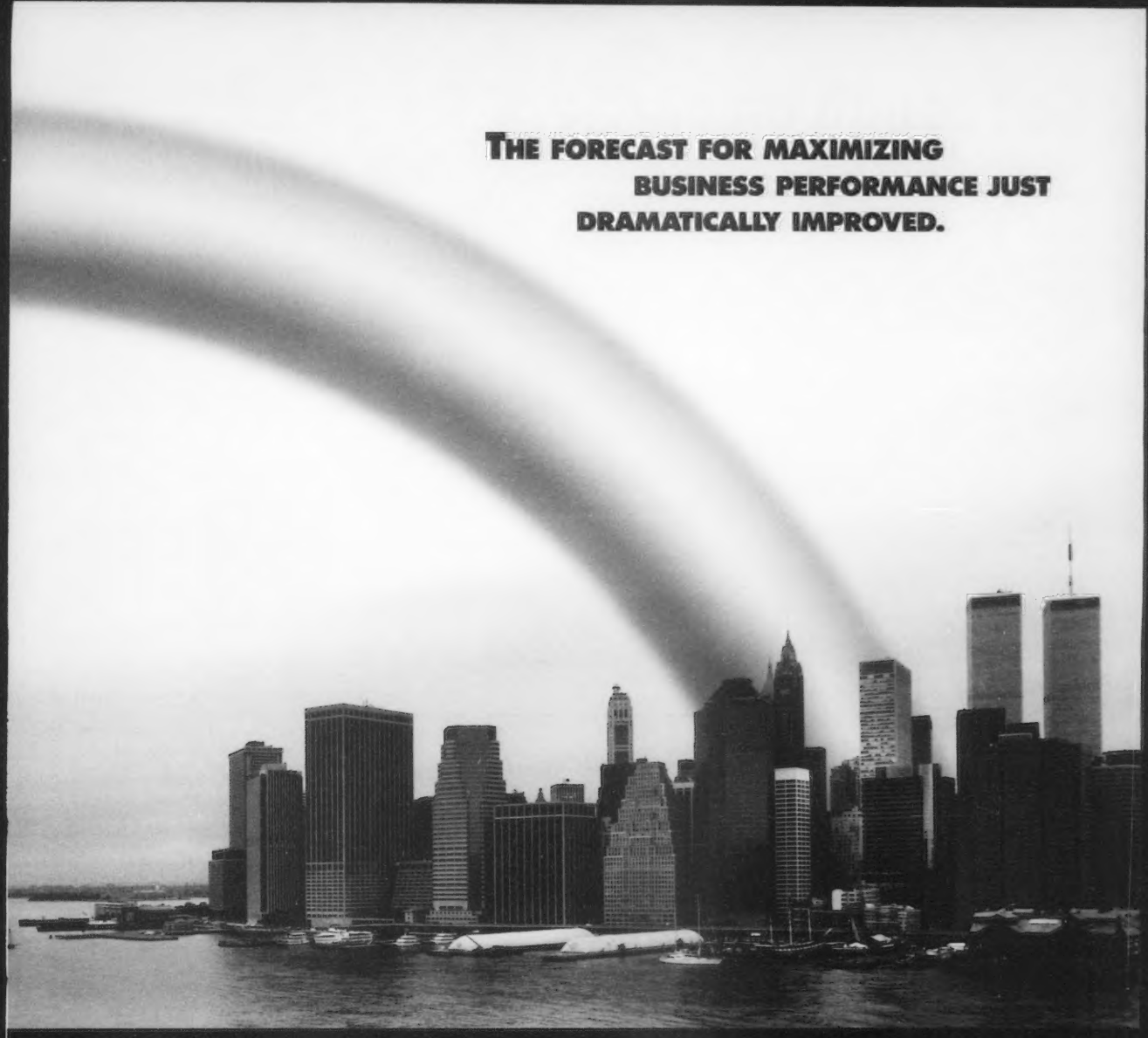
Although those additions are noteworthy, overall reliability and scalability remain unproven, said Betsy Burton, an analyst at Gartner Group Inc. in Stamford, Conn. "It's almost as if the stars have to be properly aligned to make sure it all runs smoothly, especially on NT," Burton said. Microsoft says the reliability and scalability questions have been resolved.

Two beta users said that they have put the database through its paces and that it has performed well.

Mark Mitchell, a systems adviser at Applied Automation Inc., a $100 million petrochemical device manufacturer in Bartlesville, Okla., said SQL Server 7.0 has been the database for his company's financial, sales and order-entry system since August. "The price was very attractive," Mitchell said, "and we've been able to cut the response time for our users in half with it."

Likewise, Joe Misiaszek, manager of application support for the Colorado Community College system, said the new OLAP Services component fit his needs, as did the price. "Pricing for similar Oracle and Sybase [Inc.] systems, and the technical expertise they required, was more than we could handle," Misiaszek said. "So far, SQL Server 7.0 has been very impressive." □

& More Comdex-related announcements, page 135.



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Get tough on carriers

▸ *Peers say: Insist on lower rates, fewer fees*

By Matt Hamblen
NEW YORK

WITH CARRIER prices for voice and data services dropping, now is the time for corporate network managers to get tough at the bargaining table to save millions of dollars on multiyear contracts.

By insisting on lower rates, avoiding added fees and considering bids from second-tier carriers, companies can lower their network service costs drastically, analysts advised users at the Communications Managers Association annual conference here last week.

Users should be seeking rates of less than 4 cents per minute for typical interstate calling and perhaps as low as 2 cents per minute within a year, analysts said. A year ago, that rate was typically 6 cents per minute.

"Network managers aren't doing enough of this negotiating," said David Bowers, a consultant at InTelesystems Inc. in Dallas. "If you don't ask up front [during a contract negotiation], you don't get it."

Telecommunications attorney James Blaszak, a partner at Levine, Blaszak, Block & Boothby in Washington, said the "vast majority" of companies are neglecting the negotiating process at great cost. "The major carriers are forcing things down the throats of their customers that people don't know about," Blaszak said.

"If you don't ask up front [during a contract negotiation], you don't get it."
– David Bowers, InTelesystems

For example, he said companies shouldn't automatically agree to pay Universal Service Fund fees, which can increase the total contract cost by as much as 4.5%. "If the long-distance carriers say the government made them charge this, throw them out of negotiations, because they were not forced to do this," Blaszak said.

At conference sessions on the topic, several network managers acknowledged that they haven't been aggressive negotiators but said they plan to get tougher next time around.

"In the past when I tried putting the carrier's feet to the fire, they didn't budge much," said John J. Glaser, manager of telecommunications at Datascope Corp., a medical products manufacturer in Montvale, N.J. But after considering Bowers' comments and the competitive climate, Glaser said, "We'll try harder."

Glaser said he liked Bowers' idea of hiring a smaller carrier for a specific niche, such as toll-free service. "Although the smaller ones do have questionable reliability," Glaser said.

For long-distance voice and data services, Bowers said Qwest Communications Inc., Frontier Corp. and Cable and Wireless PLC should be considered just as reliable as the traditional Big Three of AT&T, Sprint Corp. and MCI WorldCom Inc.

"The smaller guys want your business so bad that they'll make amazing offers," Bowers said. □

Tips for better voice and data carrier service contracts:

- Allow six months for bargaining before signing
- If carrier requires a minimum price, tell the carrier to give bonuses if the minimum is exceeded
- Insist that a government-approved tariff rate be included in the contract, because it may include provisions that contradict other parts of the contract
- Base credits for outages on number of users affected, not the number of minutes of the outage
- Insist on flat-rate pricing: Figure six seconds per call minimum instead of one minute

Source: InTelesystems Inc., Dallas

Unicenter goes mainframe

▸ *CA to port TNG software to 390-based apps*

By Cynthia Bournellis

INFORMATION technology managers who have long had to manage the glass house separately from their distributed networks are about to get relief from Computer Associates International Inc.

CA officials said the company will port its Unicenter TNG network management software to OS/390-based mainframes and subsystems, so OS/390 applications can be managed by Unicenter like any other network resource.

That means IT can view all its processing platforms from one management console. Businesses such as Wells Fargo Bank in San Francisco welcomed the news.

"We need a system management platform that enables us to take a view of everything in our network, including big database servers that run on mainframe databases," said Barry Lynn, the bank's CIO.

However, CA's native support of OS/390 won't help users of popular mainframe applications from Boole & Babbage Inc. and Candle Corp. manage those applications, because those vendors must add Unicenter support to their applications.

But the move will pressure those companies to add Unicenter support, said Paul Mason, an analyst at International Data Corp., a sister company to *Computerworld*, in Framingham, Mass.

MORE KNOWLEDGE

If such companies add Unicenter support, IT groups could use existing staff's knowledge of the Unicenter tools across all processing platforms, said Terry Rapoch, assistant vice president of business services at electronic equipment maker NCR Corp. in Dayton, Ohio.

CA said it will provide the same software developer's kit and application programming interfaces for the framework on OS/390 as it does for its other products.

In addition, Hitachi Data Systems and Amdahl Corp. will bundle Unicenter TNG for OS/390 with their systems. The software port to OS/390 is free. □

New tool speeds router configuration

By Bob Wallace

START-UP HiFive Networks last week announced a software package that makes it easier to configure Cisco Systems Inc. routers, log all changes and revert to an old setup if problems arise with a new one.

By simplifying administration and recording changes, the Los Altos, Calif., vendor's RouterAssistant reduces demands on frequently overtaxed information technology staffers, freeing up time for them to work on more strategic projects.

Cisco estimates it has sold almost 2 million 2500, 4500 and 4700 series routers worldwide.

The software speeds router configuration by providing a Web browser-based interface that's faster than today's command-line interface.

And it lets IT staff quickly restore downed routers, while troubleshooting problems.

"I can quickly roll back to a previous configuration if my new one doesn't work" by clicking on a single icon, said beta user Dennis Wong, senior systems manager at chip maker NVidia Corp. in Santa Clara, Calif. "Keeping records of all the changes made can help us figure out which one broke the network. That's one of the coolest features."

RouterAssistant runs on Windows NT servers and can handle up to 50 Cisco routers in the 2500, 4500 and 4700 series. Cisco is the router market leader, with Nortel Networks a distant second.

Nortel Networks and Network General Corp. also offer similar packages that make it easier to manage Cisco routers, said Elizabeth Rainge, an analyst at Framingham, Mass.-based International Data Corp., a sister company to *Computerworld*.

The HiFive offering can be linked to Cisco's larger and more comprehensive Cisco2000 network management package, which lets users manage far more types of Cisco networking devices.

RouterAssistant will ship next month with prices starting at $995 for a package that handles five routers. □

Electronic options exchange to use VMS system for trading

By Jaikumar Vijayan

THE FIRST ELECTRONIC options exchange in the country is relying on technology that has been around for a few decades to power its most crucial operations.

The International Securities Exchange — which is bidding to become the first options market to be approved by the Securities and Exchange Commission in 25 years — will use the venerable OpenVMS operating system to host its trading applications.

The platform was chosen over much more highly visible options such as Windows NT and Unix simply because of its scalability and rock-solid reliability, said Diana Wilson, CIO at the New York-based exchange.

"You can build similar [strengths] into other environments, but it needs a lot of investment" in time, technology and money to do it, Wilson said.

OpenVMS was originally developed for Digital Equipment Corp.'s VAX servers.

Now owned by Compaq Computer Corp., the technology continues to be popular among its users, though its installed base and the number of software vendors who support it have been slowly dwindling.

The options exchange will use $3 million in OpenVMS-based AlphaServer hardware and software to host its trading applications. □

MOREONLINE

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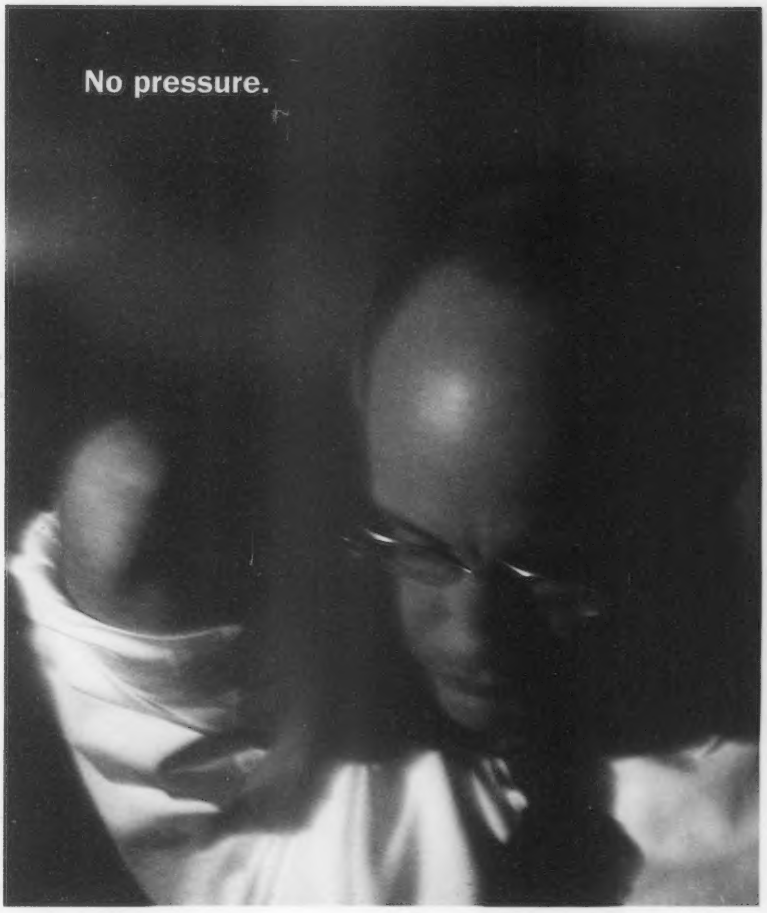

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Everyone loves Linux – or do they?

By David Orenstein
SAN FRANCISCO

A PANEL TALK on Linux packed a large room at Oracle Open World here last week, but the growing enthusiasm for Linux hasn't yet evolved into genuine acceptance in big enterprises.

Executives at Oracle Corp., Netscape Communications Corp. and Intel Corp. said Linux has become a hot topic as a server operating system.

"Linux is the Unix platform with all the momentum," said John Paul, Netscape's vice president of server technology. Four months ago, Paul said, enterprise customers would have laughed at him if he mentioned Linux, but now the free, open-source operating system is being taken seriously.

Intel's Linux program manager, Ken Shand, said his company recently invested in Linux vendor Red Hat Software Inc. because, "We just listened to our customers, and our customers were talking about Linux everywhere."

Critics of Linux say the operating system is too loosely supported by a network of volunteers and hobbyists to be a credible enterprise platform.

But Linux creator Linus Torvalds said critics who demean the operating system as a mere hobby are foolishly standing by inferior commercial platforms. "If it's a hobby for us, and it's work for you, why are you doing such a shabby job?" he asked.

But vendors' vocal shows of support for Linux don't necessarily translate into their providing a large number of products and support staff, said Rob Enderle, an analyst at Giga Information Group in Cambridge, Mass. "It's almost token support," he said. "So far it's been more of a marketing push."

Although rank-and-file developers love Linux, Enderle said, information technology managers aren't ready to bet their businesses and careers on an operating system that they don't understand well and that isn't backed by strong traditional support.

SEITH AFFOUNADO

Linux's creator Linus Torvalds says critics of his system may be standing by inferior commercial platforms

Tony Ho, a Mississauga, Ontario-based project leader at drug giant Glaxo Wellcome Inc., said he uses Linux at home and is lobbying his managers to evaluate Linux.

"I truly do think it could benefit our business," he said.

Not only could Linux be an inexpensive Web server or print server, Ho said, but also the support should be phenomenal because there's an army of eager developers who are working around-the-clock to solve Linux's problems.

Sam Cappello, a systems administrator at Envision Utility Software Corp. in Santa Fe, N.M., said his company has begun to experiment with an Oracle8 for Linux database for its development work. Linux might make a more powerful, less costly server for Oracle than Windows NT does, he said.

Envision Utility, which makes management software for commercial and municipal utilities, eventually would like to deliver Linux-based systems to customers, Cappello said.

But, he added, many of them use the VMS operating system, and it may be difficult to persuade them to try any flavor of Unix, Linux included. □

MOREONLINE

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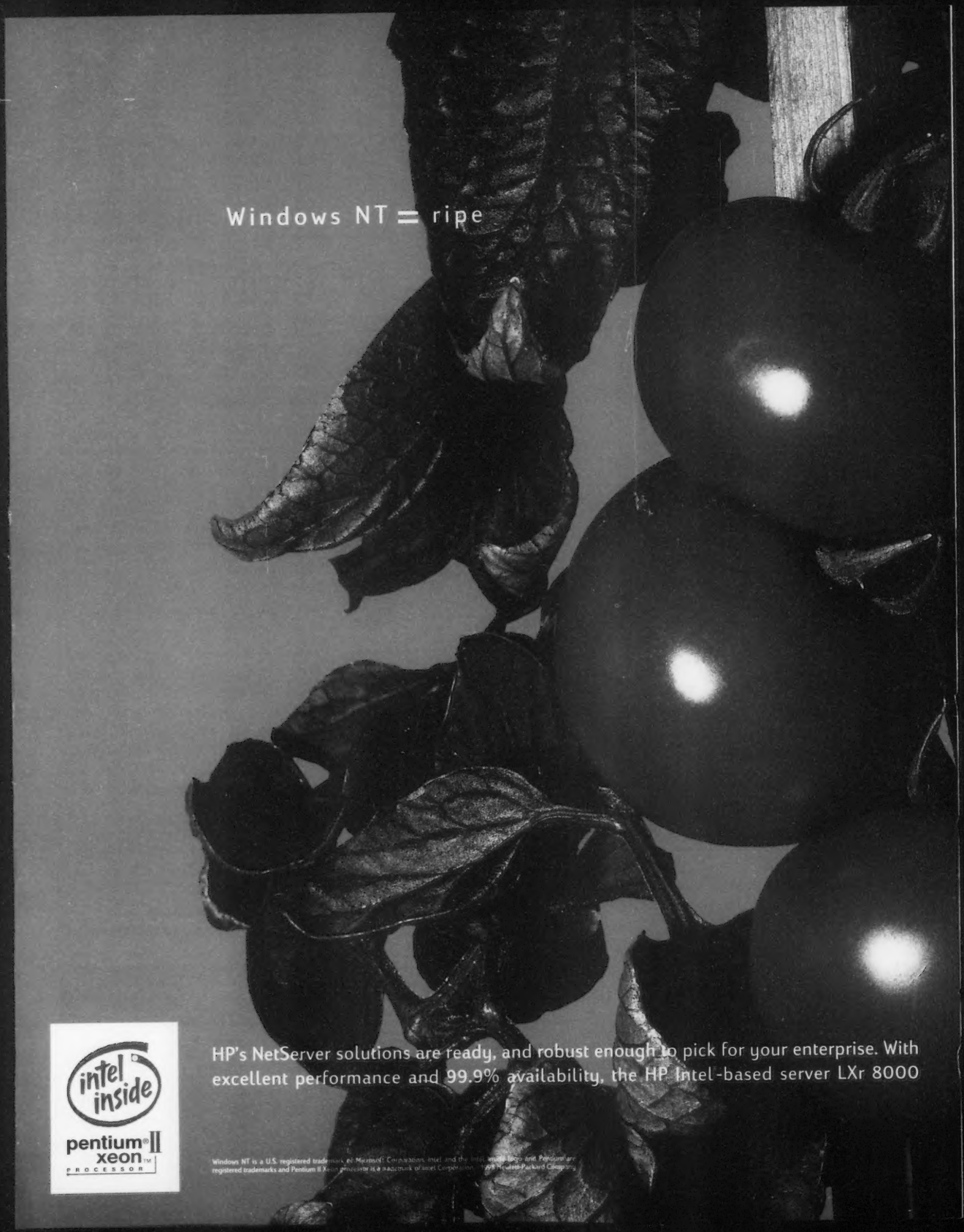
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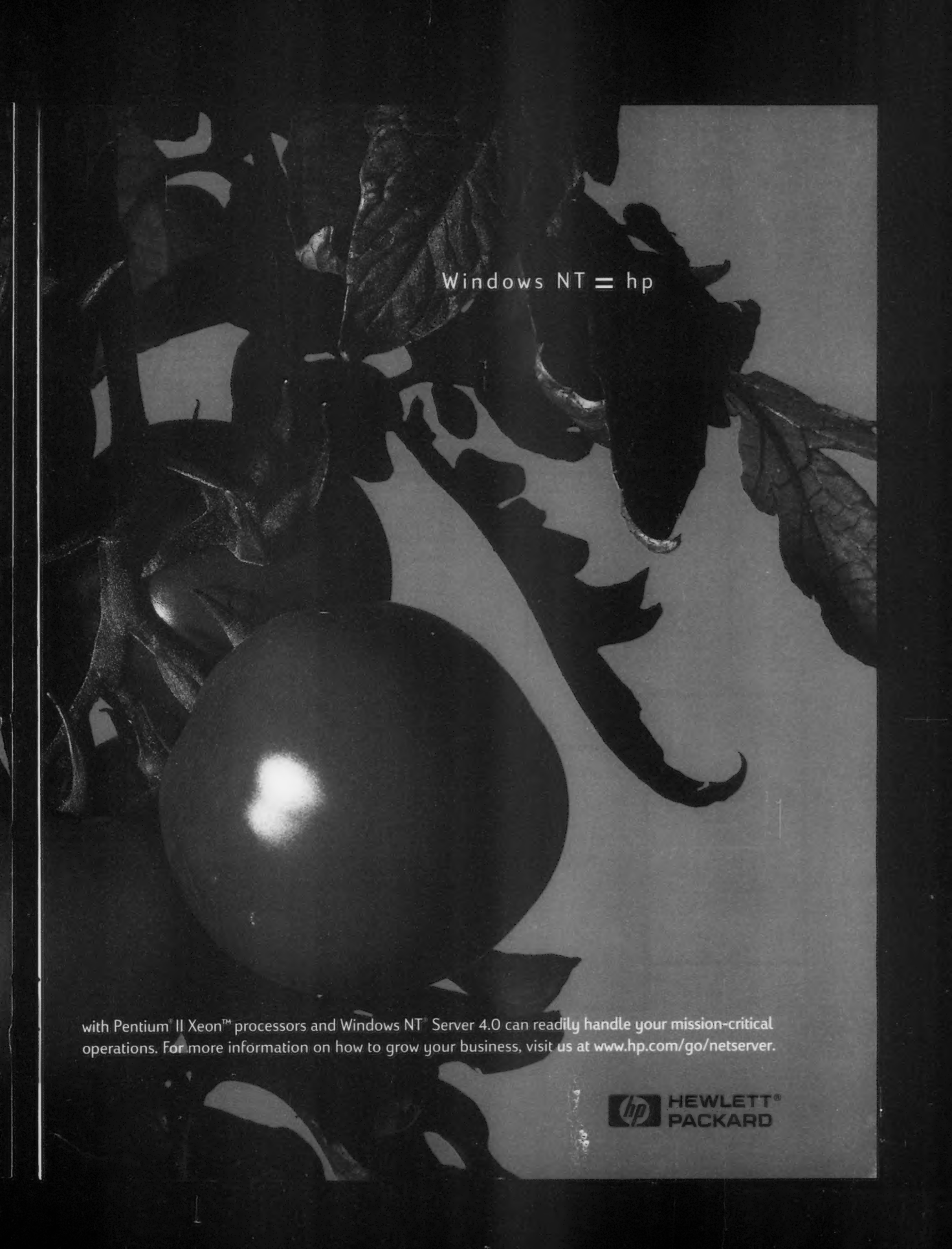
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Shipper signs IT outsource deal with IBM

By Julia King

CONSOLIDATED FREIGHTWAYS CORP. will keep new systems development in-house but is off-loading virtually all other IT operations to IBM Global Services under a new five-year, $110 million contract.

IBM will then contend with the twin headaches of information technology recruiting and managing staff turnover, which the $2.3 billion transportation company simply couldn't handle as well as a dedicated IT services company, said Consolidated CIO Matt Saikkonen.

The contract, announced Nov. 3, is the latest in a string of $100 million-plus deals IBM has signed with large companies during the past 10 months. Other big deals include a five-year, $2 billion contract with The Boeing Co. and a $139 million deal with Chiron Corp. For Consolidated, "cost saving was not the primary motivator for outsourcing. The motivator was staying ahead of the competition," Saikkonen said. "We looked at building our own infrastructure, including recruiting people, building skills in-house and running a data center, but it just [wasn't] a real core competency."

Until now, Consolidated's former parent company, CNF Transportation Co. in Menlo Park, Calif., handled all IT for Consolidated, which is based in Portland, Ore. CNF spun off Consolidated in December 1996. Under Consolidated's new outsourcing contract, IBM will provide all desktop computing services plus help desk support, data center operations and voice and data networks. Consolidated will retain an in-house staff of about 140 to work on systems development, particularly in the area of electronic commerce, Saikkonen said.

Analysts said the deals further indicate companies' growing acceptance of IT outsourcing. No longer do managers view an outsourcing deal as a last-ditch, cost-cutting move. Instead, they and their companies increasingly are turning to outsourcing as a viable strategy for securing technology experts so they can focus attention on their own core businesses.

Earlier this year, 78% of 594 IT executives surveyed by Computer Science Corp. said they had outsourced some IT functions. About half of those executives said they also plan to increase outsourcing expenditures next year. The trend is only going to get bigger, said Peter Bendor-Samuel, president of Everest Group, a Dallas outsourcing consulting company. "We expect to see a huge boon in 1999 and 2000," he said. □

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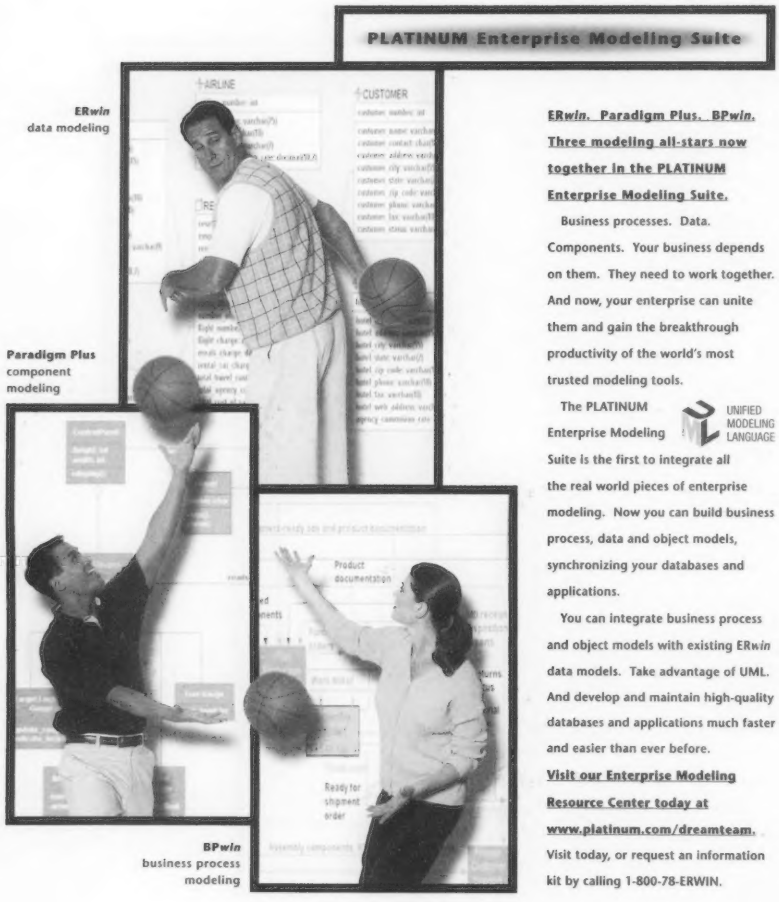

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HTML virus affects Internet Explorer

By Carol Sliwa

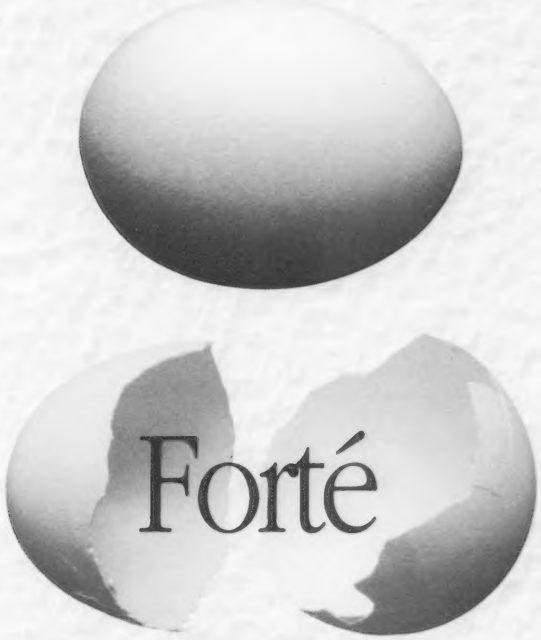
ANTIVIRUS SOFTWARE MAKER Central Command Inc. said last week it has discovered what it believes to be the first virus affecting HTML, the Web programming language.

The virus, called HTML.Internal, affects only Microsoft Corp.'s Internet Explorer browser. When a user visits a Web page infected with the virus, a Visual Basic script is activated that can add strings of text to HTML documents on the user's PC, said Keith Peer, president of Central Command in Medina, Ohio.

The default settings in Microsoft's Internet Explorer security zones warn users about potentially harmful content, asking whether they're sure they want to download it, according to Microsoft product manager Mike Nichols.

"We don't believe that a patch is necessary at this time because Internet Explorer security protects users from this kind of malicious content," he said. He added that Microsoft is looking to address the HTML.Internal scenario in future versions of Internet Explorer. □

Q: What Comes First? Development or Integration?



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Chargeback for E-mail can help recoup costs

By Roberta Fusaro

E-MAIL MAY APPEAR cheap to your end users now. But the time may be coming when they'll have to pay the postman.

Chargeback schemes, applied now in mainframe shops and some network management systems, still are relatively rare for messaging — less than half of 50 Fortune 500 companies recently surveyed by Ferris Research Inc. have instituted some kind of chargeback policy for E-mail.

> "It is very important to target the expense of services to the people who use them." – Phil Usher, Countrywide Home Loans

But that's expected to change. The Ferris study predicts that five years from now, about 80% of all corporate users will be implementing chargeback policies.

That's because E-mail is becoming more business-critical and more expensive: Depending on a company's system, it can cost between $300 to $500 per year per end-user mailbox to support their messaging systems, said David Ferris, president of the San Francisco-based research firm. And Cambridge, Mass.-based Forrester Research Inc. estimates the annual cost of E-mail software for most companies is about $750 per user.

Chargeback involves allocating a portion of network resource costs to individual end users or business units — either by a fixed rate per user or with a usage-based tariff. It often remains invisible to the end user, except in monthly reports to a business manager.

Countrywide Home Loans Inc. ended up canceling its first attempt to charge end users for keeping extra E-mail in their private mail files after meeting with some resistance.

That was last year, when information technology managers failed to properly account for variables such as E-mail applications, peripheral uses of Internet mail, pager gateways and the like, said Phil Usher, first vice president of groupware at the Calabasas, Calif., mortgage lender.

Usher's team is back at it this year. "It is very important to target the expense of services to the people who use them," he said.

Countrywide isn't alone in this belief. A 200% growth in use of its messaging system prompted the U.S. Department of Transportation to charge fees to each of 14 agencies it serves. The fees are based on relative size of the unit and quantity of E-mail sent. And NationsBank in Dallas is considering a move toward a chargeback system next year, company officials said.

Robert DeMond, a messaging specialist at R. D. Software Services in Bakersfield, Calif., said

Chargeback, page 135

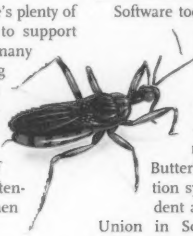
Users bugged

▸ *Vendors learn that honesty, follow-up counts*

By Gary H. Anthes

HEADLINES AND Internet alerts scream day after day about bugs, viruses, security flaws, product delays and other horrors as software soars in complexity. It sounds like an epidemic — one that could sweep through your shop if you don't stay on the ball.

But although there's plenty of anecdotal evidence to support this bleak picture, many users are shrugging off the hype. It isn't the quality of software that bugs them as much as vendors' lack of openness and often-sluggish support when bugs are found.



Users said they must expend time and energy double-checking not only the commercial release, but also the subsequent bug patches. And they've been forced to develop alternative methods of keeping alert to new bugs.

Even so, many users said software has improved in recent years to the point that reliability no longer is a serious issue. Some credit pressure from customers for the improvements but urge users to be more vocal still in their demands for quality software and top-notch service.

Software today is "much better" than it used to be, but there would be fewer bugs if users complained more, said Kevin Butterbaugh, information systems vice president at Teachers Credit Union in South Bend, Ind. "People have a higher tolerance now for things in general, and that spills over into the computer area. I mean, look at what we tolerate in the White House."

"Quality is getting better,"

Thin clients catch on

CONTINUED FROM PAGE 1

an event Tuesday that is expected to feature not only enterprise clustered server systems from Dell Computer Corp., but also thin clients, which are used to run its front-desk operations and gambling pits.

At Coors Brewing Co. in Golden, Colo., senior business analyst Nick Sherwood said the company is using thin-client software to give remote PC users faster, reliable access to centrally located data — something that was impossible over a speed-hampered wide-are network.

Added benefits are easier manageability and the flexibility to let users do local processing when they need to, Sherwood added.

Also testing the waters are large retailers such as Circuit City Stores Inc. in Richmond, Va., and Kmart Corp. in Troy, Mich., as well as some airlines and financial institutions.

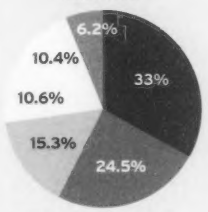
Such interest is a big change from a year ago, when users took a more cautious approach to thin clients because they were tied to immature operating systems such as JavaOS. When Wintel got involved, users were more comfortable.

Bill Bayer, manager of information technology at Komatsu Canada Ltd. in Mississauga, Ontario, said he thinks thin clients were given the cold shoulder after an initial period of extreme hype because of negative messages coming from Intel and Microsoft — neither of which were part of the equation at the time.

"When users saw they could run their Windows applications, it really opened their eyes," Bayer said. "I think thin clients are going to be pervasive, and they are working really well for us for everything but extreme power users."

Since the initial market launch last year, the definition of thin client has broadened from a promising Java-centric network computer to mean any device that runs applications from a server — making it centrally manageable and locally simplistic. Added to the mix this June, and now part of the thin client model, is Microsoft's Windows Terminal Server, a multiuser version of NT and Windows-based terminals that harness all their processing power from a server.

Shipments of network computers and Windows-based terminals as of June 1998



Total shipments: 166,444 (105,412 network computers; 61,032 Windows-based terminals)

Source: International Data Corp., Framingham, Mass.

Windows-based terminals are important, according to users and analysts, because unlike early network computers, they were specifically designed to serve the huge installed base of Windows users. Through add-on software, they also offer access to non-Windows applications and are server-centric. The rub, of course, is that users are still tied to the Windows operating system. But they don't seem to mind.

In fact, International Data Corp. (IDC) expects Windows-based terminals will outnumber network computers by 2 to 1 within the next few years, said Eileen O'Brien, an analyst at the Framingham, Mass.-based IDC, a sister company to *Computerworld*. That's because Windows is just about everywhere, O'Brien said.

IDC also is predicting that thin-client shipments will double from this year to next, with about 507,000 being shipped by the end of this year and more than 1 million next year. Contributing to the growth: availability of hardware and software for thin-client architecture, growing comfort as more users adopt the technology and a better sense of where it's best used.

The network computer's early and biggest stumbling block was the idea that corporate users would have to pull the plug on years of investment and infrastructure to adopt them, negating any cost savings they would bring to the table.

"What happened was, early on, thin clients became associated with network computing in general, with the Java initiative and with having to embrace a whole new set applications," said Audrey Apfel, an analyst at Gartner Group Inc.

Users and analysts also said the ability to run a wide range of applications and the expectation that distributed management costs will be lowered at the same time has changed that perception.

For example, using Windows Terminal Server and an add-on from Ft. Lauderdale, Fla.-based Citrix Systems Inc., dubbed MetaFrame, users can access everything from Unix applications to PC applications to mainframe applications. □

by sluggish software support

agreed Eric R. Singleton, CIO at Columbia Energy Services Corp. in Herndon, Va. "In 1994 to 1996, there was a public outcry about software companies just racing to get to the market. The outcry was enough that quality has now become an ingredient in a company's success."

RELIABILITY SELLS

Singleton said the software industry is where the automobile industry was several years ago, when it learned that safety could sell cars. Now, software vendors are discovering that reliability can boost sales while reducing their own support costs.

Indeed, in a recent *Computerworld* survey of 202 information technology professionals, those saying buggy software entails a "minor cost" to their companies outnumbered those calling it a "major cost" by 3 to 1. Respondents rated vendors' efforts to deliver bug-free software as "good" or "very good" by a similar margin.

MARC STEVEN

Sundstrand's Rod Calacci is one of many users who gives vendors low marks in dealing with customers' bug woes

"Software's not as good as it could be, but it's probably good enough," said Steve Brooks, information systems vice president at Walt Disney Co. in Burbank, Calif. "The stuff today is so sophisticated that of course there are going to be some anomalies."

But although users are giving software vendors better marks for quality, they are considerably less happy with customer support and with vendors' efforts to notify them of bugs. "On a scale of zero to 10, I'd give them a one or a two," said Rod Calacci, an information systems manager at Sundstrand Aerospace Corp. in Rockford, Ill.

In the *Computerworld* survey, twice as many IT managers rated vendors' bug-notification efforts "poor" or "very poor" as rated them "good" or "very good."

For example, Calacci said a recent bug in a new release of backup software caused a job to malfunction and overwrite data on tapes that should have been retained. The vendor had known of the bug for some time but hadn't notified Sundstrand, Calacci said.

Calacci said Sundstrand tries to build personal and trusting relationships with vendors. "We say, 'Hey folks, be honest with us. Is this the right time for a new release, or should we hold off?' If you establish relationships with them, the chances are better they'll counsel you and be honest with you."

When vendors aren't being honest, they should pay the price, Calacci said. Sundstrand recently ditched a $250,000 piece of hardware after the vendor lied about problems with it. "We went to their management several times and got the old song and dance: 'Yeah, we'll fix it, yada, yada, yada,' and we finally said, 'Enough is enough.'"

Because customers can't count on vendors to keep them informed about bugs, they have to work a little harder. Users said they have turned to a variety of other sources, including their own employees, the press, Web sites, Internet newsgroups and subscription services. No one source is sufficient, they said.

Gary Castellino, CIO at International Specialty Products in Wayne, N.J., called vendors' Web sites "the first bastion of defense" against bugs. He also said a company's help desk can play an important role in alerting users about bugs.

TEST THOSE PATCHES

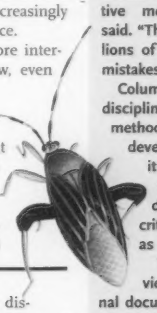
Castellino's help desk analyzes call logs to determine if problems reported by users indicate bugs and, if so, how the company should deal with them. Users often are advised to faithfully apply software patches as vendors make them available, but that isn't always a good idea. "We may not jump on them right away," Butterbaugh said. "You fix something, you break something else."

"What might be a patch for one thing might be a nail for another," Brooks agreed. "You need to have two completely separate computer systems to feel comfortable about just applying a patch. Who knows what it puts where and how to get rid of it if you don't like it?"

The most prudent customers take nothing for granted. First Union Corp. in Charlotte, N.C., has a quality assurance group that tests new releases of commercial software. The bank has another group that writes automated installation procedures for the software; many bugs are detected in the process of writing and testing the installation software, said John Swanteck, director of client/server administration.

In addition to looking for bugs, First Union does load testing to find out when a piece of software may break or when new hardware may be needed for it. Such testing increasingly focuses on the interface.

"We are seeing more interoperational bugs now, even within a vendor," Swanteck said. "If we get two different Microsoft products and they are not delivered as a suite, there will be interoperational problems."□



ILLUSTRATIONS BY KEN JOUDREY

Go to source for quality assurance

Some companies carry quality assurance right into vendors' test labs.

International Specialty Products standardized on Microsoft Corp. for the desktop some time ago, and now it just accepts whatever Microsoft throws at it, CIO Gary Castellino said.

But for major applications such as enterprise resource planning, "we actually go to the vendor and say, 'OK, we don't want to just look at functionality; we want to see what quality control tests you put the software through,' " he said.

IT managers at Columbia Energy Services visit vendors before buying mission-critical software. "I won't buy a product without knowing what the quality process is inside the company," said CIO Eric R. Singleton. "The companies that are really ahead will volunteer that before you even ask."

These on-site quality checks amount to "preventive medicine," Singleton said. "They've saved me millions of dollars and lots of mistakes."

Columbia Energy has a disciplined development methodology for internally developed software, but it has extended its standards, procedures and metrics to critical vendor software as well.

The company reviews a vendor's internal documentation and conducts interviews to assess the vendor's software development methodology, including procedures for change control, configuration management, bug tracking and testing.

"Vendors have told us that no one has ever asked to see this stuff before," said Tracy Myer, Columbia Energy's director of business systems. "But when you are spending a half-million dollars or more on a product, you certainly want to kick the tires."

— Gary H. Anthes

Cozying up to key vendors pays off

By Gary H. Anthes

ONE OF THE problems corporate users have with service today stems from their reliance on an outdated service mode, said Joe Austin, general manager of premier support at Microsoft Corp.

Calling into an 800 telephone number, credit card in hand, whenever you have a problem, isn't well-suited for today's complex environments, where many problems lie in interfaces or in places not easily identified by users, he said.

Austin recommended that companies establish closer and broader support relationships with their strategic software vendors.

For example, Microsoft's "premier" service — for which its 2,000 customers pay $67,000 per year on average — brings dedicated technical staff, workshops and system reviews.

"We go to customers and say, 'Let's look at your server environment, evaluate your configuration and change management processes and the overall supportability of your environment. Is it the kind of environment where you can prevent problems from occurring in the first place?' " Austin said.

Application software vendors got a black eye a few years ago because bugs in their software were compounded by users' moves to Windows 95 or Windows NT, said Matthew Kell, support programs manager at Autodesk Inc.

Nevertheless, user disappointment with a release of the company's flagship AutoCAD package prompted the company to beef up its quality assurance and customer support, he said.

Autodesk "hugely expanded" its beta-test program — to 16,000 customers, Kell said.

He said Autodesk also filled in service gaps left by its network of resellers by offering direct assistance — via a free Web service — to low-end customers that resellers didn't want to serve, and to the very high-end customers resellers had difficulty serving.□

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Desktop Management Interface

DEFINITION: The Desktop Management Interface (DMI) is a framework for managing and tracking components in desktop PCs, notebook computers and servers. Each system generates a Management Information Format (MIF) that contains information about the system. DMI uses the information from the MIF to track and manage PCs. DMI is hardware- and operating-system-independent, so management information can be accessed no matter what the desktop, notebook or server is running.

Adding value to DMI requires products with common framework

By Kim Girard

DESKTOP MANAGEMENT INTERFACE (DMI) has quite a simple purpose: to make a dumb desktop, notebook or server smart by letting it publish information about itself.

The Desktop Management Task Force (DMTF), the standards body, built DMI as a common framework for managing the desktop. DMI allows information to be gathered and then stored in an easy-to-find directory.

AT ISSUE

Users face compatibility problems

Directories let users manage information by using keywords. For example, if you know that several users have IBM hardware, DMI helps collect information about that hardware in a single directory. In the past, that information would have been stored in various places and would have been difficult to hunt down.

Through DMI, the network can query each PC or desktop to see what software and hardware it has. Most systems administrators use DMI to collect desktop information — such as drivers, peripherals and operating systems.

UNIFIED PRESENTATION

To date, the challenge that faces DMI is how to present management information collected in a unified way.

Helping to present that gathered information is the standard Common Information Model (CIM), which is DMI-compatible. CIM governs the way the information is presented.

According to John Dunkle, president of Portsmouth, N.H.-based Workgroup Strategic Services, PC or server hardware components make up only one-third of the total lifetime cost of the system, while training, service and support make up the remaining two-thirds of the money spent to maintain a network. Better management can help trim that price tag, he says.

"Everybody out there is trying to add value to DMI," Dunkle says. But it will take a while for vendors to solve all existing desktop problems, such as incompatibility issues among operating systems, drivers and applications, he says.

Problems occur when multiple applications are used with a mix of hardware and software. The cure is to get vendors to develop products using a common framework.

Roger Kay, an analyst at Framingham, Mass.-based International Data Corp., a *Computerworld* sister company, says more DMI standard-based products are needed. Users also need to be better educated about how to take advantage of DMI.

According to Martin Reynolds, an analyst at San Jose, Calif.-based Dataquest, DMI is "still somewhat hobbled" by the prevalence of unmanaged PCs.

"However, we think that that balance will tip in the next 18 months, and managing PCs will become more common," Reynolds says.

Kay adds: "Right now, [DMI is] underimplemented." □

Girard is a freelance writer in Somerville, Mass.

PROS:

- **DMI is operating system/network operating system-independent**
- **DMI lowers the total cost of ownership by providing a common framework for managing notebooks, desktops and servers**
- **DMI supports a Management Information Format (MIF) that allows vendors to describe manageable components of their products in a standard language in one central, easy-to-find directory. MIFs allow vendors to share management capabilities**

CONS:

- **Many corporate PCs aren't DMI-compliant**
- **Desktop management isn't mandatory in corporate environments**
- **Proprietary products make implementation difficult**
- **Software management products lag**

Computerworld *talked to Desktop Management Task Force (DMTF) President Winston Bumpus, a network architect at Provo, Utah-based Novell Inc., about the Desktop Management Interface (DMI) and the future of desktop management.*

Q: *What did DMI do for the industry?*

A: People now have a better idea as to what's installed on their machines — the components and the properties. Management before DMI [meant] having to go out and do all kinds of tricks to find out what was on the machine. With DMI, they can easily figure what's installed on the desktop.

Q: *Where are vendors expected to take desktop management in five years?*

A: I think [vendors] have done a great job managing hardware devices. There's still a great challenge to manage all the software components on the machines. Also, the DMTF has just announced how to use the Web to manage systems. Over the next five years, as the Internet evolves, so will the use of a global network environment to manage desktop systems. For banking, electronic commerce, extranets — to be able to interact and solve problems — clearly, the Internet will make that easy. We have such a diverse environment — Unix, Windows, Web and mainframes. By using Web technologies, everything is ubiquitous. It's a way everybody can connect. The idea is being able to manage any device using this ubiquitous technology.

Winston Bumpus

Q: *Do you think the DMI standard has suffered from lack of user awareness?*

A: It's a chicken-and-egg thing. The good part is, systems vendors put it in and support it, but it's taken some time for products to roll out in the management space. DMI is going to become more of a piece of the management structure. The next management systems will be more dependent on it. Clearly, all the major platform vendors support it or are in the process of rolling it out.

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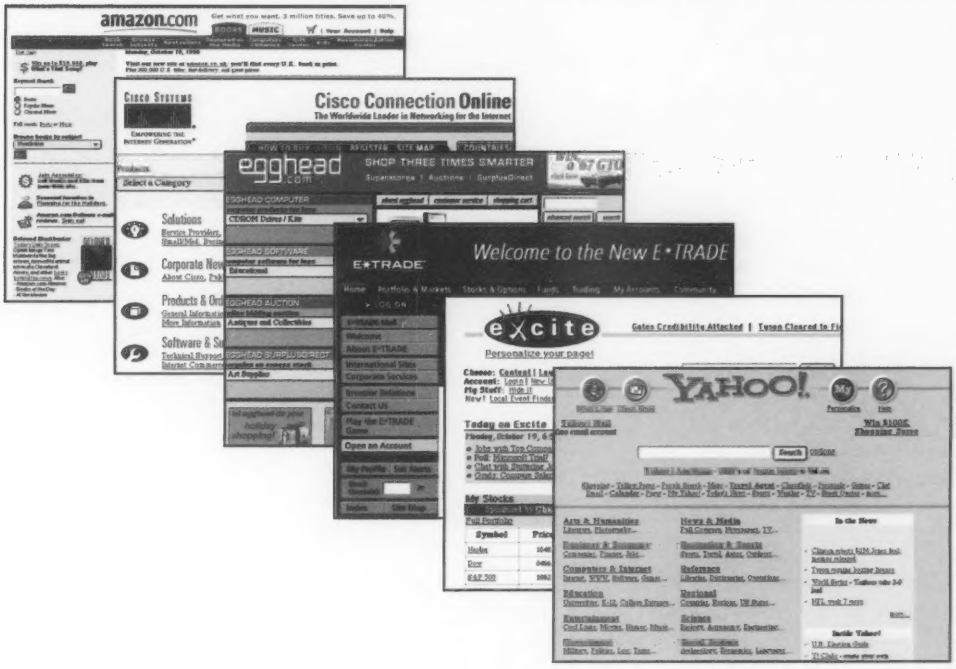

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OPINION

Hype fatigue When we chose hype as the cover story theme for our Comdex issue this year (see Kim S. Nash's feature, "The Hype Masters," page 71), we didn't expect industry leaders to be so supportive.

But Microsoft and Intel have proved all too willing to unleash a supporting fusillade of press releases. Microsoft, whose Windows NT 5.0 project is suffering the effects of scope creep, has demonstrated that when vendors don't have something real to talk about, they announce a strategy. So now NT 5.0, whenever it comes out, is going to become Windows 2000 — with five versions, to boot. Bill Gates also recently announced that future versions of the operating system will have an integrated database. Take that, Joel Klein!

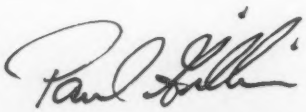
Today in Las Vegas, Microsoft will further stoke the hype fire with a gala rollout of SQL Server 7. This one, Microsoft says, really can scale up to a very large size. Funny, but that's the same claim it made for NT back in 1992.

Intel has been busy, too. Even though its already-delayed Merced chip is still two years out, Intel has announced a successor, called McKinley. And guess what? McKinley will be even faster than Merced. Stop the presses!

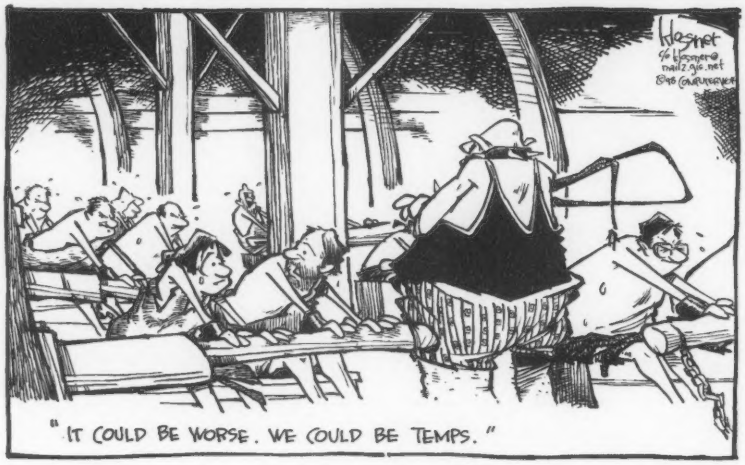
Guess what, guys? No one cares. The Wintel duopoly is responding to market pressure the only way it knows: by layering on more features. Microsoft is worried about the very real resurgence of Unix at the high end and Novell and Linux on the file server. Unable to forecast a delivery date for Windows 2000, it has promised to stuff even more functions into the operating system that already has 40 million lines of code and to deliver it in multiple flavors. IT managers ask for simplicity; Microsoft delivers complexity.

Intel is fighting new, low-end competition from Advanced Micro Devices as well as corporate IT's perception that PCs are too complex and difficult to manage. Its response is to promise faster chips leading, presumably, to more complex desktops.

The irony is that this has worked before. Intel and Microsoft give IT people what they say they don't want, and IT buys it anyway. Isn't it time to change all that?



Paul Gillin, *editor in chief*
Internet: *paul_gillin@cw.com*



LETTERS

The Gen X choice: Quality of life or around-the-clock jobs

I BELIEVE Barb Cole-Gomolski's Oct. 5 article about Gen Xers' work ethics ["Work like a boomer? As if!"] should serve as a loud and clear wake-up call to American corporate management.

I watched my father have to go to court to fight to regain only 65% of his 42-year pension contribution. Employee loyalty is challenging for anyone in today's age of heavy mergers and acquisitions where jobs are created and destroyed by mere swipes of a pen.

If I wanted to be on call 24/7, I would have joined the Marine Corps.

When recent studies show that the average employee in corporate America works an average of 47 to 50 hours per week with no overtime compensation, it can be easily understood why Gen Xers have developed a general resistance toward wearing pagers.

Even with flextime compensation, some companies allow only one hour off for every two hours of overtime.

The employee is really left with no choice but to place a premium on continuing technical education in order to remain viable until retirement age.

William J. Cannistra
Westerville, Ohio
Bill_J_Cannistra@Mail.BankOne.com

I'M A MARRIED Gen Xer who has been on the job since 1994. I'm still idealistic about the mythic 40-hour-a-week job.

I saw my father work 60-plus hours a week in the same profession, and I swore I'd never do that to my family. I'm considering leaving this profession in the future because its worth lessens with each increasingly uphill project. Right now, I can't find the value in the stress and strain the job can place on a relationship or the family. If I wanted to be on call 24/7, I would have joined the Marine Corps instead of embarking on a computer science degree.

Kevin D. Hammon
University of Rochester
Rochester, N.Y.
KHammond@acs.rochester.edu

Disappointed with *CW*, but pleased with SAP

I UNDERSTAND *Computerworld*'s right to exercise its editorial judgment in deciding what information to include in articles. However, I'd like to express my dissatisfaction with the article "R/3 complexity stymies users" in your Sept. 21 issue.

The story did not convey an accurate picture of SunAmerica's experience with SAP and missed the point of my interview discussion with the writers. Nowhere does your article state the positive aspects of the R/3 implementation on our business.

The truth is I cannot see another enterprisewide solution better than SAP R/3 for SunAmerica. We are extremely pleased with the added functionality the SAP R/3 system will provide us and are more than positive we made the correct selection in SAP R/3. We are disappointed that *Computerworld* portrayed only a limited perspective of our implementation experience.

Roy Nakabara
Vice president of cash services
SunAmerica Financial Inc.
Los Angeles

Thanks for the sanity check on evolving buzzwords

SOME OF MY younger colleagues sometimes get upset when I question the wisdom of scrapping the big machines to pursue the world of client/server, LAN/WAN, server clusters and all that power on the desktops. Long forgotten are the days when solving any problems at the desktop merely involved replacing the terminal.

We're coming full circle, all the while bringing the worst of both worlds closer and closer together.

Thanks for the sanity check ["Name game," CW, Sept. 21]. It's nice to see that someone else appreciates the irony in the ever-evolving world of IT. (Golly gee, didn't that used to be called MIS?)

Rudy Romo
The Advertising Checking Bureau Inc.
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What Bill Gates won't say

David Moschella

Every time I watch Bill Gates' testimony, I can't help but think about Jack Nicholson in his now-famous role as Col. Nathan R. Jessep in the 1992 film, *A Few Good Men*.

Col. Jessep, America's highest-ranking officer in Guantanamo Bay, Cuba, is accused of ordering a "code red," a severe form of hazing.

Can we handle the truth about Microsoft? We'll probably never find out.

Although he knows such tactics violate military law, he strongly believes they are needed to maintain the required level of troop discipline and readiness. Jessep dismisses the law as the work of Washington bureaucrats who have no idea what it's like on the front line of the Cold War.

Initially, Jessep denies any knowledge or involvement in the hazing, which got out of hand and led to the death of a Marine private.

But eventually, under intense questioning, Nicholson erupts with his classic line, "You can't handle the truth," and then he passionately and proudly confesses to all. Given Bill Gates' usually combative personality, I have to think that, deep down, he too is dying to let loose something like the following:

"You want the truth? Well, here it is. Yes, we have tried to wipe out Netscape. Why shouldn't we? Is there any doubt that they were trying to wipe us out? Back in 1996, I couldn't pick up a newspaper without reading about how this new company was 'the next Microsoft.' It would have been a betrayal of our customers, employees and stockholders for us not to respond in the strongest possible manner.

"So, of course, we used the most powerful weapons we had: We used the Windows screen to woo AOL, we used Mac Office as a lever with Apple and we used our great wealth to sustain a huge development effort for a product we intended to give away for free. We used those strategies because they were the most effective way to further and protect our position. Wasn't that the obvious thing to do? What's the big deal?

"And yes, of course, we're doing the same thing with Sun and Java. Why on Earth would we want to support a company that always boasts about its plan to undermine all that we have worked for?

"If government bureaucrats want to write laws that say we have to support our competitors, then they obviously have no idea what the software business is really all about. Does anyone have the slightest doubt that if Netscape, Sun or Apple were in our position that they would do exactly the same thing? You don't become the world's most valuable company in just 20 years by worrying about the interests of your competitors. In this business, you're either the winner or the loser, and we're here to win."

Of course, Bill Gates will never say anything like that.

The lawyers have trained him in the bizarre art of how to say as little as possible without entirely losing credibility. Thus, instead of a much-needed debate about whether Microsoft should play by a different set of rules, we have today's theater of the absurd, where the leader of the world's most successful company acts as if he had no idea what was really going on.

In the end, Jack Nicholson vented his feelings and was arrested. Bill Gates won't take that chance. Can we handle the truth?

We'll probably never find out. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is dmoschella@earthlink.net.*

Put that hardware in a little black dress

Joseph E. Maglitta

Having spent much of this year nodding through hundreds of product demonstrations and stalking mile after mile of trade-show aisles, I must inexorably arrive at the following conclusion: This industry needs more little black dresses.

Wait! Before you dismiss me as a caffeine-crazy, sexist kook, consider this: Two very smart, rich guys — namely, Bill Gates and Steve Jobs — agree with me. Pretty much.

Between irked, monosyllabic grunts of federal testimony, Gates said new products must be more simple. (Stop laughing. We must let time test his sincerity.) Jobs' statements have come through action: First, unleashing the so-stylish '50s-meets-'90s IMac. That translucent, aqua-and-white number has caused a sensation chiefly because it's so sexy. Jobs' second statement is embodied in the tag line for the computer's ad: Sorry, no beige.

For those who avoid or abhor fashion magazines or realities, let me spell it out: Our industry, the computer industry, needs more simplicity. And sexiness. More specifically, computer and communication *products* need more simplicity and sexiness. And to me, thanks to nine years of married, holiday party-going, nothing sums up those noble values better than the little black dress.

It's time to move beyond our industry's Henry Ford-like notions of color (one or two), style (sturdy, functional) and tired design models (vanilla box). Every technology, from radio to television to toasters to autos to tabletop fans, has had to pass through early functional stages to become something more, something more aesthetic, more creative and — dare we say — more beautiful.

Why are we different?

Consumer electronics makers now rushing the PC industry really understand that. Sony, Panasonic, Sharp, Philips and others know that style sells. The new magnesium-clad notebooks, black, svelte and sculpted-thin monitors, and dark, sensual cell phones are stunning.

That's good. Because if the PC, handheld and "info-appliance" industries are to grow beyond their current stagnation, they must capture the fancy and dollars of new customers (and bored old ones) with offerings much more like the little black dress. Simple and sexy. Like these:

Laptops: The Sony VAIO series. Cool, blueberry violet. The Vadem Clio (Sharp TriPad). A $1,000 tablet and flip-top laptop with cool aluminum arms. Apple PowerBook G3. Soft, padded leatherette look, inviting. Any of the handsome new magnesium-clad Toshibas.

You don't have to be an industrial designer to know what's sexy.

Handhelds: The Phillips Nino 320. My favorite new device design (though its software could be simpler). Space age meets art deco. Great curves. Sony ICD-70 Voice File Recorder. Silver and black, easy-read display. Upload comments to a PC and E-mail. InterLink Electronics remote Point Plus, a 40-ft. remote control for PCs.

Servers: NEC Express 5800. Gentle, wavy curves, a pity to hide.

Monitor: IBM Intellistation Workstation. Black, postmodern sculpture. Curvy waves on bottom. IBM gets it, too.

E-Books: Born beautiful, especially the Rocket EBook: black and sleek, calm, green screen with two simple navigation buttons.

Others: The Hewlett-Packard CapShare 910 Information Appliance. A slick handheld scanner. Novatel Sage Wireless Modem. Logitech TrackMan Marble FX, a ruby mottled ball, sweeping hand-matched curve.

I'm no industrial designer, but I know what's sexy. And that's the point: Consumers do, too. □

Maglitta is Computerworld*'s industry editor. His Internet address is joseph_maglitta@cw.com.*

OPINION

Give Unix-NT peace a chance

Bill Laberis

I know well from experience that the press loves to write about conflict and wars. Pick up any trade or business publication this week and you'll see stories about the Justice Department's "war" on Microsoft, the "battle" with the year 2000 monster and the "fights" between competing technologies.

As the corporate customer, you're often urged to choose sides in such wars, with your weapon of choice being your purchasing power. That's true in the Unix-NT war. Choose a side and make a commitment.

But understand this: There is no inherent struggle or strife between Unix and NT, no more than there is conflict between the manual and battery-powered screwdrivers in my tool box. There is a battle raging among proponents of each operating system, and it's a battle you should avoid at all costs. After all, there's mounting evidence that Unix and NT can get along just fine.

There's mounting evidence that Unix and NT can get along just fine.

Do as sensible managers are doing: Lay plans for an extended period of coexistence between Unix and NT, with the edge increasingly going to NT. On the workstation side, NT has already all but buried Unix. On the server side, according to International Data Corp. (IDC), a sister company to *Computerworld*, 40% of the units of server software sold last year were NT, 20% were Unix. But nearly half the money spent on server software was spent on Unix, meaning the obvious: Big users run big applications on Unix. Looking out to 2001, IDC foresees Unix server software still comprising about one-fifth of all unit sales, with NT unit sales increasing dramatically. Translation: They'll have to coexist. But how?

Some users have found that Computer Associates International's Unicenter TNG is quite adept at linking files from the two operating systems in a real-production environment — particularly when TNG runs on NT and various of its agents run on the Unix platforms. There are other products available targeting this environment of Unix-NT detente.

The main benefit is that you don't have to make a one-or-the-other decision by any means, despite all the rhetoric. Instead, you can select the platform that makes the most sense today and, say, in two years. So if your present and near-term application development plans involve a high-transaction processing growth or potentially rapid scale and corresponding high reliability, you have to favor Unix, despite its higher cost and command-line-driven, user-hostile pedigree. There's little that Unix does today that NT isn't likely to do in five years, only more cheaply and with an ease that has the desktop user in mind, not a Unix programmer.

There are those who argue that NT's fate is impugned by users getting turned off by Microsoft's intransigent bullying of competitors and customers. Nonsense. *Computerworld*'s own random survey of 18 major users recently found CIOs labeling as "absurd" any suggestion that Microsoft is bullying them [CW, Sept. 14].

The bottom line is that the market is taking its course, with the increasing availability of products and services that facilitate Unix-NT coexistence. Some will continue to promote this silly idea of a war where there is none. So cover your ears, shut your eyes to the noise and spectacle, and just trust your own good judgment. □

Editor in chief at Computerworld *from 1986 to 1996, Laberis is now president of Bill Laberis Associates, a consulting and publishing company in Holliston, Mass. His Internet address is bill@laberis.com.*

Euro-privacy will flummox U.S. business

John Gantz

Members of the European Common Market will no longer trade personal information with U.S. companies that don't adhere to European rules and regulations on privacy protection.

One outcome of this little-known but important policy directive of the European Economic Community is that airlines can't keep the meal preferences of their European passengers online. Or, to be more exact, the airlines don't believe that the advantage of knowing which passengers want fruit plates is worth flouting the standards.

Europeans have long led the charge in protecting personal information; the European directive gives citizens significant rights to access, correct, withhold and track the transfer of personalized information. It also sets up a mechanism — through new privacy agencies and commissioners — for redress if those rights are violated.

Though most of us here in the States pay lip service to the rights to electronic privacy, we really don't seem too concerned in practice. We might as well write our Social Security numbers on subway walls, for the care with which we protect our own information. Our lawmakers have adeptly skirted any firm stance, opting instead for white papers while urging "the industry" to take action. The result: a general consensus that we all ought to have the basic right to see what personalized data companies keep on us and to get it fixed if it's wrong — but no clear concept about how to do it. We have no U.S. policy for dealing with the protection of personalized information.

There are two technology fixes in the works. The first, called P3P (Platform for Privacy Preferences), is a protocol being pushed by the World Wide Web Consortium for profiling personal data on Web sites. The protocol involves the user in deciding what personal information will be collected and shared. The second, the Information Content & Exchange protocol, is for the company-to-company exchange of personal information. It's being pushed by a group of IT vendors and direct marketing firms.

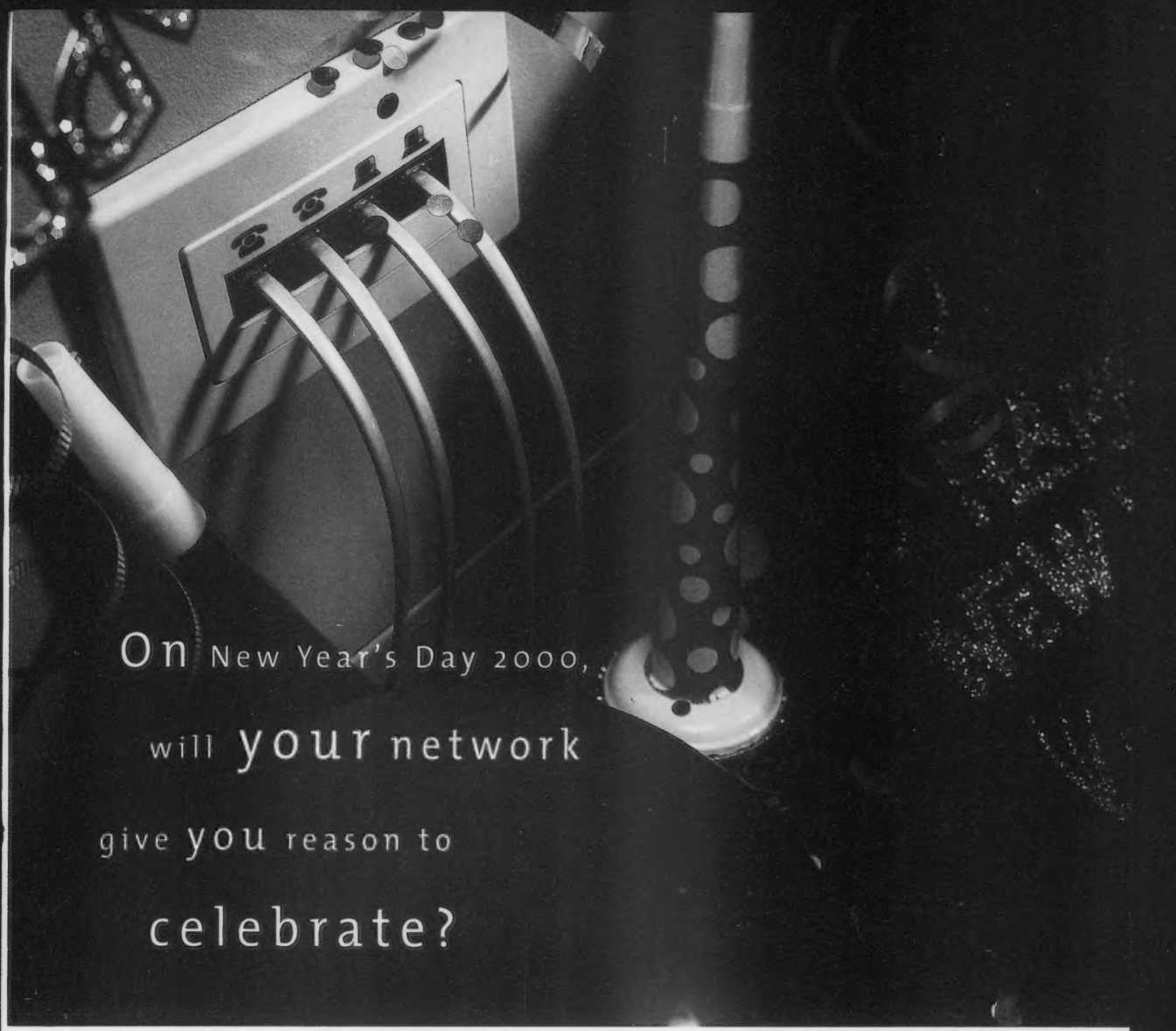
The problem with those technology solutions is that they make gathering and trading personalized information — "profiling" is one of the hottest growth industries of the Internet economy — much easier without solving the basic privacy problem in the U.S.: the lack of a policy. To the Europeans, information traded with U.S. companies is about as secure as information traded to companies in China, where there are no privacy protection laws. As the Europeans discover the political and trade advantages that can accrue as they enforce their privacy laws, I see a problem for U.S. IT organizations already reeling from the year 2000 problem. Now someone's going to have to develop companywide privacy protection policies, implement them in practice and convince the European authorities that they meet the standards.

Americans might as well write their Social Security numbers on subway walls.

But it can be done. The medical industry has long been able to trade personal information across the Atlantic, and many banking organizations probably are covered. But companies trying to rein in their freewheeling practices regarding personalized data will be doing so in an environment where technology makes it more profitable than ever to collect and share personal information.

IT managers and CIOs sit in the middle of these two conflicting trends. □

Gantz is a senior vice president at International Data Corp., a sister company to Computerworld *in Framingham, Mass. His Internet address is jgantz@idcresearch.com.*



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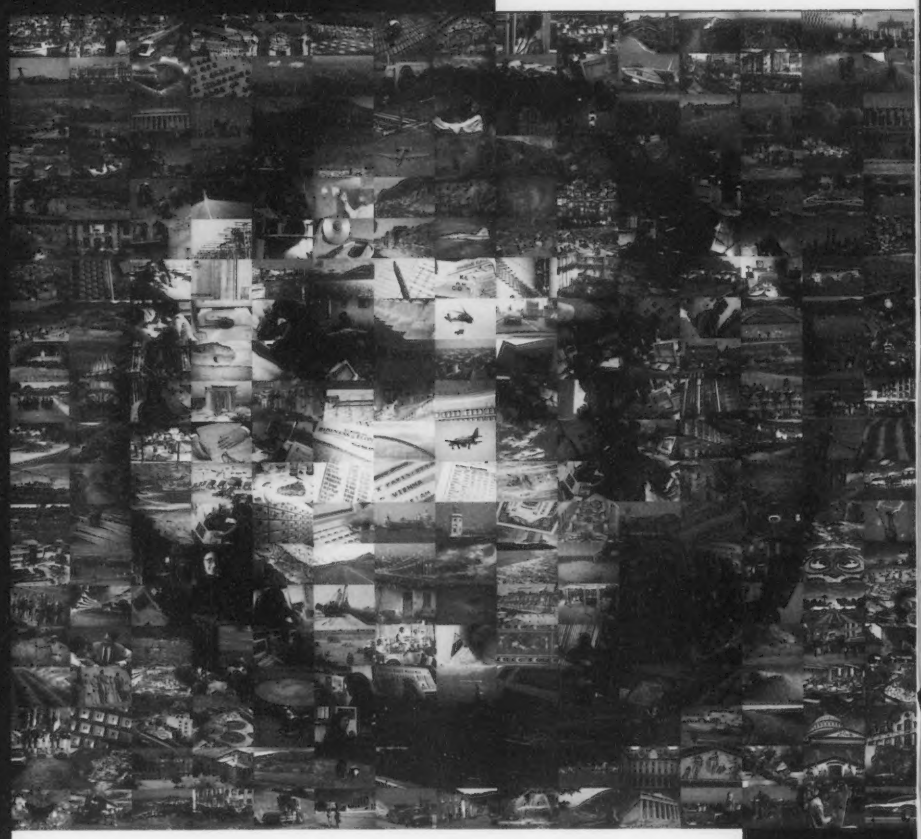

It was one of the most visited Web sites of all time. In all, the France '98 site, powered by software from Sybase, generated over 1.5 billion hits from more than 170 countries. Shoppers purchased World Cup merchandise via an e-commerce store that averaged over 760,000 hits per day. Journalists and staff members relied on an intricate intranet to access valuable, timely information. From the Web to e-commerce to intranets, France '98 was a global success, and one that we can replicate for businesses like yours. With our proven technology, we can create complete Web solutions that enable your company to bring together and distribute mountains of information to provide the competitive advantage you need to achieve your organizational goals. To learn more about the success of the France '98 Web solution and what we can do for your business, visit www.sybase.com/worldcup or call 1-800-8-SYBASE (Ref. CPCW4).

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Corporate Strategies

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Briefs

1999 payoffs for year 2000 consultants

- Retention bonus equal to 8% of annual salary
- Project milestone and other short-term incentives equal to 11% of salary
- Eight days of technical skills training annually
- Four days of project management training annually

Base: 283 newly hired year 2000 consultants at 10 major consulting companies

Source: William M. Mercer Co., New York

SAP user groups

The Americas' SAP Users' Group is expanding its vertical industry groups to align more closely with SAP AG's strategic business units. The Chicago-based organization is forming industry groups that represent aerospace and defense, automotive, banking, engineering and construction, insurance, the public sector, retail, service providers, telecommunications and transportation. For more information about industry group participation, register at *www.asug.com*.

Free ATM alliance

Nineteen Western Pennsylvania banks and thrifts have agreed to waive surcharge fees for customers who use any of the 177 automated teller machines (ATM) owned by members of the Freedom ATM Alliance, organized by Dollar Bank in Pittsburgh and Citizens National Bank of Evans City.

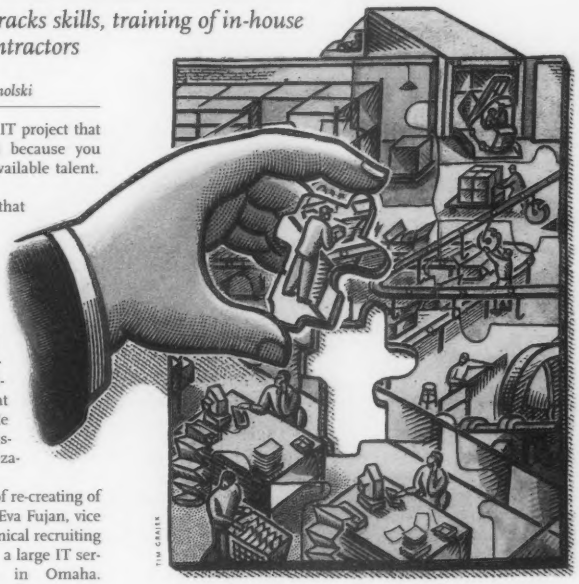
Outsourcing R/3

Mahle Inc. and Mahle Pistones, the U.S. and Mexican subsidiaries of Germany-based Mahle Group's Pistons and Cylinders division, have hired Waltham, Mass.-based Plaut Consulting Inc. to carry out a six-month implementation of core SAP America Inc. R/3 modules for materials management, sales and distribution and production planning modules on its IBM AS/400s.

Match people, jobs faster

► Software tracks skills, training of in-house staff and contractors

By Barb Cole-Gomolski



YOU HAVE A KEY IT project that may be delayed because you don't have the available talent. Or do you?

The reality is that information technology departments — many of which rely on a mix of employees, outsourcers and temporary workers — don't always know what skills are available in their highly distributed organizations.

"There's a lot of re-creating of the wheel," said Eva Fujan, vice president of technical recruiting at Inacom Corp., a large IT services company in Omaha. When you have offices worldwide, "it's almost impossible to avoid occasionally hiring [skills] that you already have in-house."

Several software vendors now are tackling that issue with products designed to help companies fill jobs faster by tracking available skills and open positions and making that information available over a network. Called enterprise workforce planning (EWP), it's essentially a logistical system for people resources.

EWP was designed to track employees' skills and training as well as hourly billing information much more tightly than other human resources systems, which typically track hire dates and job titles rather than specific skills, analysts said.

The ability to avoid duplicating skills and to match employees to open positions is increasingly important, users said,

Job matching, page 40

• Customer service

Here's a cure for the Web E-mail blues

By Julia King

INTELLIPOST CORP., a $1 billion-plus Web-based marketing services company, receives hundreds of customer E-mails every day. But it doesn't answer a single one.

Instead, it funnels electronic inquiries directly to Brigade Solutions Inc., a new Web-based customer service outsourcer that guarantees that its "cyberreps" will answer 95% of all questions with a written reply within 24 hours.

If they don't, customers such as Intellipost simply don't pay.

Since signing on with Brigade in July, Intellipost CEO Steve Markowitz said Brigade has kept its promise to deliver good customer service on Intellipost's behalf — a true rarity in the world of consistently lousy Web-based customer service.

Fully 42% of 125 major Web sites surveyed this year by New York-based Jupiter Communications Inc. either neglected customer E-mail entirely or took as long as five days to respond.

Web E-mail, page 40

Xerox PARC director addresses future, Comdex

By Stewart Deck

The ideas germinated at Xerox Corp.'s Palo Alto Research Center (PARC) in California are legendary: notebook computers, Ethernet, the graphical user interface. But patenting them was almost an afterthought in the 1970s, said John Seely Brown, PARC's director and chief scientist.

Today, Brown's team of 300 computer scientists, engineers, sociologists, anthropologists and linguists takes intellectual property "deadly seriously," Brown said, and the team members are poised to begin talking about some of their recent developments at Comdex Fall '98 in Las Vegas.

Brown, who will deliver a keynote speech at this week's show, recently spoke with Computerworld *about several topics.*

John Seely Brown

On PARC's impact on the office:

Every person has one foot in the digital world and one in the virtual world — part of our confusion in the office is how to remember what is physical and what is virtual. So we're interested in creating a seamless boundary between the physical and virtual by creating a portal between the physical and virtual.

Every copier, if digital and Web-enabled, becomes a portal for getting any document in the physical world into the virtual world and vice versa. So instead of thinking of copying as a boring old notion of moving from paper to paper, it allows you to think of moving from virtual to physical.

On Xerox digital technology:

The key is a whole new concept of a paper/user interface that works off of our [DataGlyph] technology, which lets us use a set of nearly invisible glyph marks that make any document as easily read by a machine as it is read by a human. So we

Xerox, page 40

Africa meets on Y2K

▸ *World Bank offers aid for 'realistic' fixes*

By Gideon F. For-Mukwai

TO HEAD OFF the looming technological disaster as the clock ticks down to Jan. 1, 2000, the World Bank in Bangladesh has spent more than $13 million to alert Central African states to fight the problem, according to a report in the *Cameroon Tribune*.

Most states weren't fully aware of the problem or had taken few steps to remedy it, the report said.

A recent meeting in Yaounde, Cameroon, brought together information technology specialists from Nigeria, Ghana, Sierra Leone, Congo, Liberia, Central Africa Republic and the host country, according to the newspaper.

The World Bank is offering aid packages of $54,000 for each realistic proposal addressing the problem. It also recommended development of national action plans and formation of ad hoc committees in each country.□

For-Mukwai writes for the IDG News Service in West Africa.

SHORT

Client/server deal

Staff Builders Inc., a Lake Success, N.Y.-based homecare and staffing provider, has licensed Pathways Homecare, a software system from Atlanta-based HBO & Co. that automates intake, scheduling, reimbursement and clinical operations. Staff Builders plans to deploy the client/server system nationwide by next October. Pathways Homecare will replace the company's current homecare information systems and interface to its general ledger and payroll systems.

Job matching

CONTINUED FROM PAGE 39

especially as they rely more on consultants and other outside labor.

Last year, U.S. firms spent $140 billion on IT services, and that number is expected to grow to $350 billion by 2002, according to research firm Dataquest in San Jose, Calif.

EWP will be key for companies that want to better manage their workforces, said Judy Hodges, an analyst at Framingham, Mass.-based International Data Corp., a sister company to *Computerworld*.

Hodges said that in addition to hiring people fast, IT departments are also more concerned these days with retaining their talent. She said EWP products, which were designed to complement human resources information systems, could make it easier for firms to do that by keeping track of their training and development.

DEARTH OF PRODUCTS

At this early stage, there are few EWP products available. Hermosa Beach, Calif.-based PeopleMover Inc. is shipping PeopleMover, which helps companies allocate people to temporary jobs or projects based on their skills and availability. The tool handles resume scanning and can match resumes with open jobs or projects. It also tracks test results and payroll information. Staffing companies, which include Robert Half International Inc. and Atlanta-based Norrell Corp., have been early adopters, but PeopleMover plans to target the corporate market as well as large systems integrators.

Fred Shulman, co-president of AETEA Information Technology Inc., a large IT staffing and consulting firm in Rockville, Md., said he plans to use PeopleMover to track a database of about 50,000 prospects. The software will help AETEA determine which skills are most in demand and where it has had the most success hiring hot skills.

Start-up Icarian Software Inc. in Sunnyvale, Calif., is expected to roll out products in the EWP space soon. Another player, Evolve Software Inc. in San Francisco, is developing ServiceSphere.

Several of the EWP start-ups plan to integrate their packages with existing human resources information systems, such as those from PeopleSoft Inc. and Oracle Corp. But Hodges said large human resources software players probably will expand into the EWP space.□

The Web E-mail blues

CONTINUED FROM PAGE 39

Some sites didn't even bother to list an E-mail contact.

It's in that deep black hole that Brigade CEO Russ Cohn sees a potential gold mine.

"As companies come under more and more pressure to cut [call center] costs, we see the Internet as becoming the vehicle for customer service," Cohn said. "Everybody's talking about electronic commerce. What we are is the back office of electronic commerce."

Eventually, Cohn said, he expects his customers to include not only high-tech companies, but also cost-conscious banks, insurance companies and health maintenance organizations.

The Web: Where E-mail customer service is lousy about half the time

42% of Web sites take as long as five days to answer E-mail, or ignore it altogether

19% of travel-related sites take three days or longer to send a response

54% of retail shopping sites take less than 24 hours to respond to E-mail

Base: 125 major Web sites

Source: Jupiter Communications Inc., New York

DISTINCT SERVICE

Unlike other customer service and call center outsourcers, Brigade was set up specifically to provide Web-based customer-support services. The company's cyberreps work out of offices in San Francisco and Madras, India, which together can have 100 people on duty per day, in two shifts at each location. The time-zone difference gives Brigade around-the-clock coverage.

Employees respond to incoming E-mail queries using information contained in individual electronic knowledge bases, which Brigade develops in conjunction with its clients.

Brigade charges companies between $1 and $2 per message, which Cohn said is about half the amount it would cost companies to handle E-mail responses internally.

For that fee, companies also have Web access to real-time reports that detail how many E-mails Brigade has received on their behalf, as well as how and when the queries were answered.

Using that information as a guide, companies such as Intellipost can adjust marketing campaigns, provide different kinds of information on their Web site or quickly make other changes to meet customers' demands.

They can save money, too, although Markowitz declined to say how much.

"Brigade has made an investment in hardware, people and training, and they are specifically set up to handle inbound E-mail," Markowitz said. "They bear all the fixed and variable costs, while we pay on a variable cost basis."

Another big reason to outsource is to gain access to critical skills, which differ from those of experienced call center workers, according to Martin Prunty, director of consulting at Alltel Call Center Solutions in Scottsdale, Ariz.

"People in the call center are hired because they can speak, not because they can write, so there's definitely a competency issue to consider," Prunty said.

Traditional call center outsourcing companies, such as ICT Group in Buffalo, N.Y., are beginning to offer E-mail-based support services as well, Prunty added.□

Xerox PARC

CONTINUED FROM PAGE 39

can build a paper/user interface that you scan in, and it becomes like a smart job ticket: It tells the machine what you want done with it. But that's just a start — you'd like it to be able to intelligently file documents according to things you underline and so on.

On other PARC developments:

We're thinking about the workscapes of the future in the knowledge age, with the notion of sharing knowledge with and around a document. The document, whatever form it's in, is actually a focal point of the construction of the understanding and the sharing of knowledge.

"We're also studying what happens when you blur the boundary between material science and computation: How do you start to build new types of artifacts that know where they are and what's happening around them and respond to situations around them? For example: things that know where they are and so know when they're moved and know what's next to them and can build linkages to those things."

On database developments:

Everything, of course, turns on handling large repositories of documents: video streams, audio streams, multimedia. We're looking at how to put wrappers around databases to give users the ability to index, browse and consolidate a stream.

On haves and have-nots:

New platforms like the digital set-top box are going to be in more homes than you can count.

The ultrathin client portal onto the World Wide Web of services will fundamentally transform the haves and have-nots, but if you have the world moving toward thick clients, then you'll always have a gulf.

"I think the move from thick to thin to invisible client will do more to transform this problem than anything else.□

Snapshot

TRAINING LEADERS

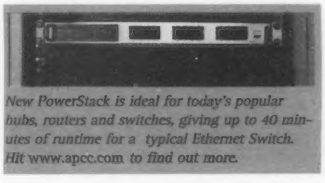
Worldwide IT training revenues:

Company	1996 revenue	1997 revenue
IBM Global Services	$440M	$520M
Oracle Education	$257M	$333M
SAP Education	$197M	$325M
KnowledgePool	$236M	$276M
Global Knowledge Network	$200M	$255M

Source: International Data Corp., Framingham, Mass.

The path to network uptime is paved by APC's new PowerStack™

If your network's job is to speed data from point A to point B, what happens when the power stumbles and fails while the trip is only half over? Bad packets, reset switches, downed hubs, irate users... the list goes on and gets uglier with every second of downtime. A server-based Uninterruptible Power Supply (UPS) protects only a small part of the data path, but now there's APC PowerStack, a UPS designed specifically for the places between your servers: hubs, routers, switches and bridges. Best of all, it's from the company that protects more networks than all others combined: APC.



New PowerStack is ideal for today's popular hubs, routers and switches, giving up to 40 minutes of runtime for a typical Ethernet Switch. Hit www.apcc.com to find out more.

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Internet Commerce

Extranets ♦ The World Wide Web ♦ Intranets

Briefs

E-BOOM

What plans do you have for implementing electronic commerce?

- Already implemented
- Plan to implement this year
- Plan to implement next year or later
- No plans to implement

Base: 138 IT managers at companies with annual revenues of $1M or higher

Source: Zona Research Inc., Redwood City, Calif.

Search Gates' video

CNN Interactive has posted a searchable version of Bill Gates' video testimony. Using technology from Virage Inc. in San Mateo, Calif., CNN Interactive lets users conduct keyword searches of the testimony given in the Microsoft Corp. antitrust trial. The video is posted at *www.cnn.com/tech/computing/video/gates/*.

HotJob at Ford

Ford Motor Co. said it plans to use Hotjob.com's Softshoe Internet recruiting software as part of its Web-based recruiting system. Ford will use the software to post jobs and accept resumes on its Web site.

Trade documents

BankBoston Corp. is partnering with Pawtucket, R.I., toymaker Hasbro Inc. in exchanging electronic trade documentation through a system called Bolero. It is an Internet-based joint venture of SWIFT, the Brussels-based financial telecommunications network, and The Through Transport Club, an industry association involved in the logistics and insurance aspects of trade.

For E-commerce, integration is key

▸ *Accessing data across systems may grow sales*

By Sharon Machlis

IF YOU WANT to take full advantage of Internet commerce, you need to make sure your company's multitude of applications can easily share information.

ELECTRONIC COMMERCE

And that's not easy.

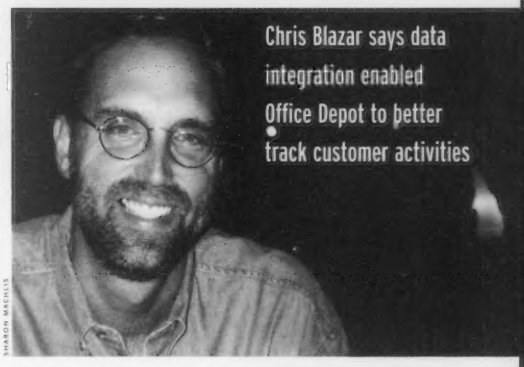
"Today's piecemeal approach won't scale," analyst Ted Schadler cautioned several hundred attendees at the recent Boston Forrester Forum, an electronic-commerce symposium sponsored by Forrester Research Inc. "It gets pretty ugly pretty fast."

But there's a major advantage to overcoming that hurdle: learning all about your customers' ordering and complaint histories. That can give sales and customer service personnel crucial information that allows them to target certain products based on a customer's past purchases, or allow a phone representative to access customers' attempts to fix a problem by E-mail.

"It allows for up-sell opportunities," said Judith Meskill, executive director of switched services at SBC Internet Services in San Francisco, a division of SBC Communications Inc., which provides Internet services under the name of several regional phone companies. "Operating with hard data is a wonderful thing."

For example, if a customer's site traffic is increasing, an SBC phone representative could recommend upgrading the customer's class of service. Likewise, retailers can target special promotions or products to try based on past purchases.

For E-commerce, page 46



SHARON MACHLIS

Chris Blazar says data integration enabled Office Depot to better track customer activities

Real-time intranet may be medical first

By Sharon Gaudin
MIDDLETOWN, CONN.

BRANCHING OUT into a large visiting nurse system, physician groups and teaching programs, Middlesex Health System Inc. needed a way to share real-time patient information, improve care and stay competitive.

So Middlesex, which was a stand-alone hospital four years ago, is building an intranet-based repository that houses 4.3 million clinical results, including real-time lab work and radiology test results, as well as care summaries and medication listings for 200,000 patients. The $1 million project includes a Web front end, which cost just $7,500 and may be the first of its kind.

Doctors said the system is changing the way they treat their patients. And the CEO says it's changing Middlesex's relationship with health maintenance organizations and insurers, along with the way the system competes locally against giants such as Yale New Haven Hospital and Hartford Hospital.

"This is central to our strategy," said Robert G. Kiely, president and CEO of Middlesex

Middlesex, page 44

PETER CLASS

Middlesex Health System's Ludwig A. Johnson created a Web front end for his company's intranet using Progress Software's WebSpeed

GM site lets dealers pick equipment

By Bob Wallace

JUDGING BY the many ways they're speeding to it, automakers seem to think the Internet is the best thing since the assembly line.

First, some launched shopping services for new and used cars.

Then came parts-ordering, followed by automaker-to-supplier links over the Automotive Network Exchange, an Internet-based virtual private network.

Now General Motors Corp.'s dealer equipment unit (GMDE) has launched a Web site (*www.gmde.com*) designed to offer dealers an easier way to

GM Web site, page 47

World Wide Wait

The average time, in seconds, to download a home page during business hours for the week of Nov. 2, 1998

Top-performing Web sites	
Netscape	4.26
Hewlett-Packard	4.28
Yahoo	4.39
Alta Vista	4.40
UUnet	4.44

Best areas to Web surf	
Pittsburgh	5.17
Boston	5.67
Seattle	5.88
Worst areas to Web surf	
Minneapolis/St. Paul	20.78
Columbus, Ohio	19.57
Norfolk, Va.	18.32

Source: Keynote Systems Inc. (*www.keynote.com*), San Mateo, Calif.

Netscape focuses on E-commerce

Netscape Communications Corp.'s strategy has evolved considerably during the past few years, from the browser and intranets to electronic commerce and extranets. Computerworld senior editor Carol Sliwa interviewed John Paul, Netscape's senior vice president of server products, about the changes.

CW: A major area of focus for Netscape used to be groupware. Was that a mistake?

PAUL: We thought there were better ways to apply [the messaging and collaboration products] we've got and succeed. I

John Paul says Netscape users want to "bring their business to the Net"

mean, why give in to the fight with Lotus and Microsoft, where the gorillas are, and give away software? When you win [a contract], you lose, because you don't make any money.

CW: Netscape also keyed on intranets. What changed?

PAUL: I'd say it was an evolution of Internet technology.

Two years ago, that's what customers wanted to buy. I think today what customers want to do is bring their business to the Net, which has nothing to do with intranets.

An intranet was just a cheaper, more standard way to do what they've always been doing. Taking your business to the Net is fundamentally changing the way you do business. This is what's hot, not intranets.

CW: Netscape used to beat the drum about its "Open Network Environment," advocating Java and the Common Object Request Broker Architecture to build Web-based applications. Do you still believe that's the path your customers should follow?

PAUL: We've backed way off that. We're not as religious as we used to be because one problem was that the customer had to adopt our entire religion before they would really deploy, and enterprises are heterogeneous. Now I'd say a lot of our focus is: Take the standards that we know exist outside the firewall, and let's work on integrating existing systems to that. C++? Java? You pick the language you want to write in.

CW: Does it matter to you if customers opt for Microsoft technology, such as the Component Object Model?

PAUL: No. Now it's a question of: Let's be practical.

CW: Is there one approach customers should take?

PAUL: I guess now we'd be religious saying you should use this three-tier Web server architecture [client; Web/application server; database]. The good news is, Oracle's saying it, Sun's saying it, IBM's saying it.

CW: Other vendors seem to be harping on Enterprise JavaBeans more than Netscape.

PAUL: Yeah, I think [Enterprise JavaBeans] is overdone. It's a good step forward. It helps us standardize how to build reusable components and potentially share 'em across different vendors' products. But it is not nirvana. Nirvana is when I can build a commerce site that links to all my systems I've got today and it works.

CW: Who are your chief competitors in the server space?

PAUL: It tends to be Oracle, IBM, Sun.

CW: Instead of one 800-pound gorilla, you've got three.

PAUL: We're always now focused outside the firewall. Extranet. It's a harder problem to solve, and when I look around, I don't see those other guys really focused there.

CW: Is Netscape's server strategy now geared toward application servers more than the SuiteSpot line [which includes messaging, directory and collaboration servers]?

PAUL: Yes. We used to sell technology components, and it took a lot of vision to take those components and figure out what you could do.

[Now] we're trying to go out and say, "Here's your business problem. And here's the apps we can give you right now. And here's the infrastructure that you should build on. And here's all the experience we've got with [Netscape's] Netcenter [portal site] on what works and doesn't on the Net. And here's professional services."

CW: How will you try to simplify the server line?

PAUL: We're coming up with some bundles, generally geared around E-commerce. We're trying to say, "You've got this business problem. You want to do interactive marketing on the Web. Buy this package."

CW: How many packages will there be?

PAUL: It won't be 20 and it won't be three. Somewhere in between there. □

Netscape makes case to business customers

As Netscape's focus has changed, so has its customer approach, senior vice president John Paul explained in an interview with Computerworld's Carol Sliwa.

CW: Speaking to customers, do you focus more on business issues than the technology needed to address them?

PAUL: We're very serious about the technology underneath, but we're trying to explain to people how we can help them solve their business problems. Citibank first wanted to be sure we were aligned with their vision on how they were going to do E-commerce. The technology was at the end of the deal, not at the beginning of the deal.

CW: Are you selling to IT or to business managers?

PAUL: We traditionally have sold mostly to IT, but more and more, we are starting to see line-of-business managers — the VP of marketing, the VP of customer service or operations. Those are the people that I find our story most compelling with. They hear of the Ciscos; they hear of the Dells, the Amazon.coms. And they [say], "How am I going to do it?"

CW: Do they go around IT?

PAUL: No. They're coming in partnership.

CW: Is that a departure?

PAUL: Yeah. With intranets, it was IT, and it was the most visionary IT guys. The guys that aren't visionary wouldn't quite know what to do with this technology.

CW: How strong is the trend of selling to the business side?

PAUL: It's the majority of how we're now approaching customers. I don't know how many CIOs have been in here, and I'll mention a directory server and they'll say, "What is a directory server? Why would I use it?"

Then I have to explain some business reason why they would want it. So we're trying to change the language in which we speak to say, "Here's the business problem." And then, at the last minute, you tell 'em, "Now you know how we're going to do that. Oh, here's this directory server." But it's not the other way around.

CW: Which it was a couple of years ago.

PAUL: Sure. Even just a year ago.

Middlesex

CONTINUED FROM PAGE 43

Health System. "In order for our doctors to treat their patients well, they need to know what's going on with them. They shouldn't be out hunting for records and charts. Now they have it all right there."

And Kiely said that although good patient care is a goal in and of itself, the system is also key to the business side. "The whole name of the game in this business is forging relations with HMOs and insurers," he said. "They evaluate us, and if they see us as poor quality, poor use of resources or negative patient satisfaction, they're not going to contract with us or send patients to us."

Larry Powala, a medical industry analyst at Dorenfest & Associates in Chicago, said he's interested in seeing the system once it's fully up and running next year because no one has been able to make a real-time system like Middlesex's work between multiple facilities.

"If they can make this work, it will be very interesting," Powala said. "A lot of people are going to want to see how they made it work across different systems, across a wide geographical area. It's a lot to coordinate."

The system is accessed from PCs that run Microsoft Corp.'s Windows NT Workstation, via Netscape Communications Corp.'s Navigator browser. The repository, which is built on Progress Software Corp.'s database, sits on an HP-UX server. The Web servers run on NT and Sun Microsystems Inc.'s Solaris.

The system wasn't initially Web-based, but Ludwig A. Johnson, information systems facility manager, said he has converted most of the system using Progress' WebSpeed, an application development environment for the Web. "The product was $7,500, and that's peanuts for a face-lift and good results," Johnson said. "If I can get a cheap Web front end onto my system, that excites me. That's why I went with Progress . . . for the database, too. The tools were better than anything Oracle and Sybase had, and it was so much less expensive."

Johnson said he estimates that the project will cost about $1 million for the software, hardware and people time, payable over two years. Johnson's IT budget is about $2 million per year out of the health system's $10 million annual budget.

The system is working well for cardiologist Dr. Arthur McDowell. "It's revolutionized the way we take care of patients," McDowell said. "Everyone I take care of has another doctor, like a primary care physician. Before, we used to spend hours finding patient records. Now when I walk in to see a new patient, I head straight to my computer and see what doctors they've been seeing, what tests have been done, what the results are and what medications they're on. If I couldn't find out if a test was done, I'd either have to have it redone needlessly or move on without it."

Dr. Michael Saxe, chairman of the emergency department, said the system helps him treat patients faster.

We're under a lot of time pressure," Saxe said. "I don't have time to wait for someone to run up to records at 2 a.m. and find someone's history. On an average day, I go into the system every five to 15 minutes. If I have to wait even six seconds, that's too much for me." □

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For E-commerce, integration is key

CONTINUED FROM PAGE 43

One place to deploy such applications is at the call-center level. Office Depot Inc. this month will begin testing a browser-based system for its call-center representatives.

The new system will help the call center become more like a sales center and not simply an order transcriber. Reps will be able to make recommendations to customers based on their access to multiple applications, said Elizabeth VanStory, vice president of Office Depot's Internet group in San Francisco.

NEW-GENERATION MIDDLEWARE

Schadler recommended using a new generation of middleware called a component platform, which lays the groundwork for applications to work together. With that in place, just a small amount of additional middleware is needed for each application. There are several component platforms on the market from vendors such as Microsoft Corp., IBM and Oracle Corp.

A large corporation may also want to use message hubs, he said, because they are servers that can send and receive data from many applications. They are expensive, however.

Office Depot is using a mixed bag of tools to achieve data integration, said Chris Blazar, vice president of telecommunications in Delray Beach, Fla. The company uses Microsoft's COM-plus (the COM stands for Component Object Model) as its component platform as well as some messaging technology to move data among legacy systems. "There are so many pieces involved," he said.

The company can better serve its customers this way, Blazar said, because it's easier to keep track of customer activity and product information.

SBC uses the EService 98 customer-interaction package from Silknet Software Inc. in Manchester, N.H., to tap in to technical information so users can seek answers to their questions online. The system also allows users to track "trouble-ticket" information.

While she wouldn't discuss specific profit numbers, Meskill said the increased integration "has had a very productive impact" on operations. The EService package handled 16,000 customers in its first two weeks, and only 200 of them subsequently had to call for assistance. □

Tips for E-commerce newbies

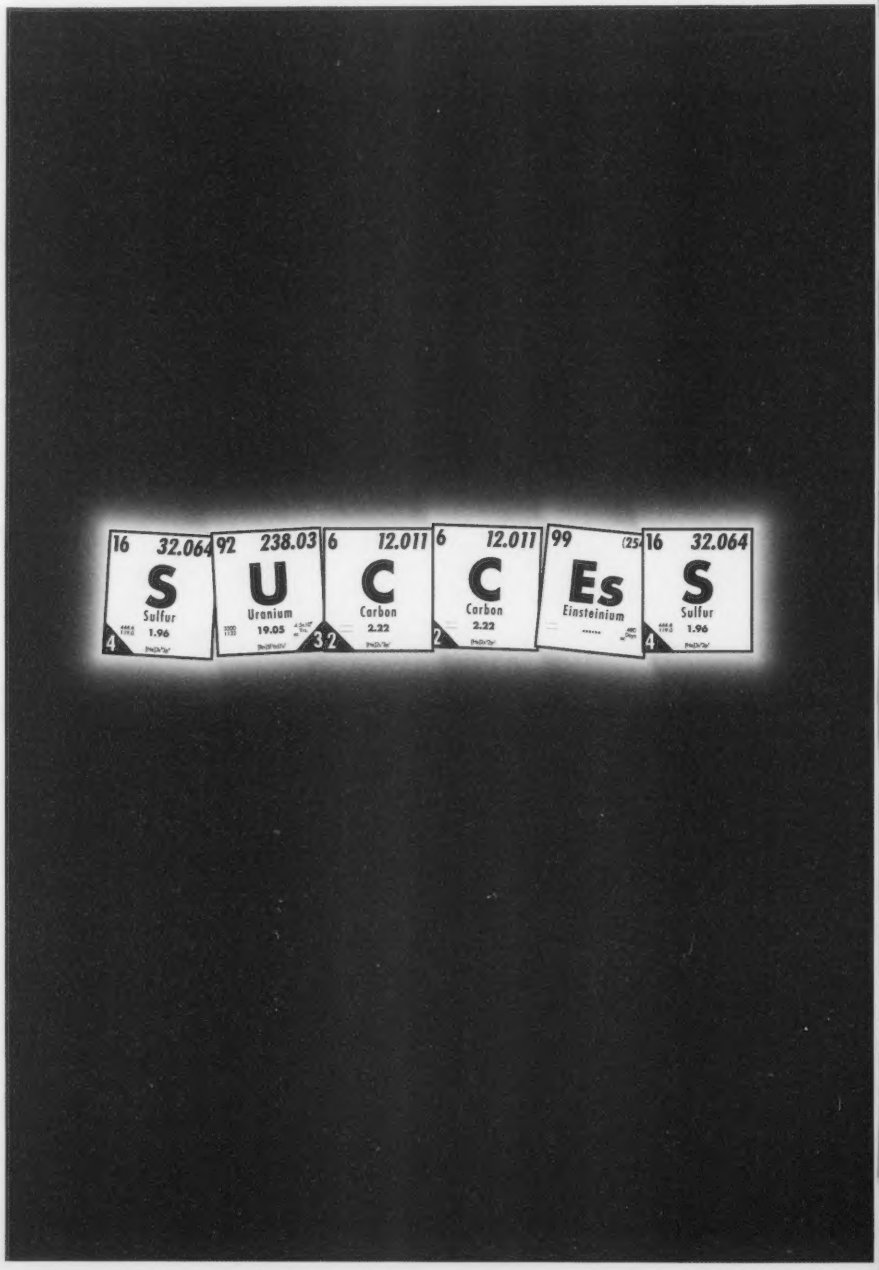
For companies just starting to integrate their applications for electronic commerce, Forrester analyst Ted Schadler suggests the following steps:

1. Independent actions you can take without a major budget commitment: teaching programmers about working with component platform middleware, tying together selected systems with a message hub server (or server cluster) and defining your internal data descriptions using the Extensible Markup Language (XML), an increasingly popular technique for tagging data.

2. With a larger financial commitment (perhaps 15% of an information technology budget), companies can retrofit existing systems by adding middleware to applications that tie in to the component platform, integrate front- and back-office systems and work with key partners on XML-based data exchange.

3. The final steps are anchoring all applications into component platforms, opening your back-office systems to key partners and participating in XML working groups.

—Sharon Machlis



GM Web site

CONTINUED FROM PAGE 43

order equipment than faxing or phoning in orders.

Automakers "realize that almost anything that can be done using a catalog or a telephone can be done more efficiently online," said Chris Denove, an analyst at J. D. Power and Associates in Agoura Hills, Calif. "The trend is to move toward electronic commerce as the standard way to do business." Automakers will continue to offer more services using the Net during the next few years, he added. The GMDE Web site is just the latest step in this direction.

GM is the first of the Big Three U.S. automakers to enable dealers to buy equipment over the Net. Ford Motor Co. dealers currently order equipment using the phone or fax, although that eventually may change. "I'm sure that's something that we will likely look into," said a company spokeswoman. Chrysler Corp. doesn't sell equipment to its dealers. Toyota USA lets dealers order equipment over its data network but is looking to move to an Internet-based approach.

The GMDE Web site offers more than 10,000 service equipment items from more than 100 suppliers whose Web sites are hot-linked for dealers who need additional information on desired gear. After entering their dealer codes, dealers can order items such as lifts, alignment equipment, wheel balancers and battery chargers, all of which are included on their monthly parts bill.

"The benefit to GM is better customer service to dealers, as it will speed up the delivery and improve the accuracy of product orders," said Charlie Yankitis, general sales manager at GMDE. The benefit to the dealer is that the Web site "can be used around-the-clock and is quicker than having to wait on the phone," Yankitis added. He didn't say how much faster electronic orders would be processed, but he did say GMDE spent $75,000 on the effort, which is expected to pay for itself in six months to a year, a spokesman for the unit said.

"It's the wave of the future," said Lee Wills, office manager at Grubbs Chevrolet in Woodstock, Va., who plans to try the site to make ordering more efficient at his dealership. "We'd be interested in using it instead of burning time doing orders over the phone. We'd save time on product ordering."

GMDE hopes the site will eliminate the process of paging through multiple, bulky catalogs to find equipment and then calling in or faxing orders, thus freeing up time for other efforts.

Will the Web site replace faxed and phoned-in orders? "The service is still in its infancy, but we see things moving in that direction," Yankitis said.

The site lets dealers' service managers view photos of equipment, read listings of prices and other vital information and keep a running total of items to be purchased. When the shopping is completed, an order form is sent online. The site also enables dealers to read the latest service and equipment news and browse quarterly equipment specials.

Not all GM dealers will be able to use the site, but GM says more than half of its 8,400 dealers have Internet access. □

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VIGNETTE CORP. has announced Vignette Syndication Server, software for building content distribution relationships on the Web. According to the Austin, Texas, company, the Windows NT- or Unix-based software automates placement of electronic content on third-party affiliated Web sites. It's targeted at the editorial content distribution, financial and retail markets. Distribution Manager is the thin-client application used by content generators, and Subscription Manager is used by affiliate sites to subscribe or unsubscribe to syndication offers. Pricing starts at approximately $50,000.

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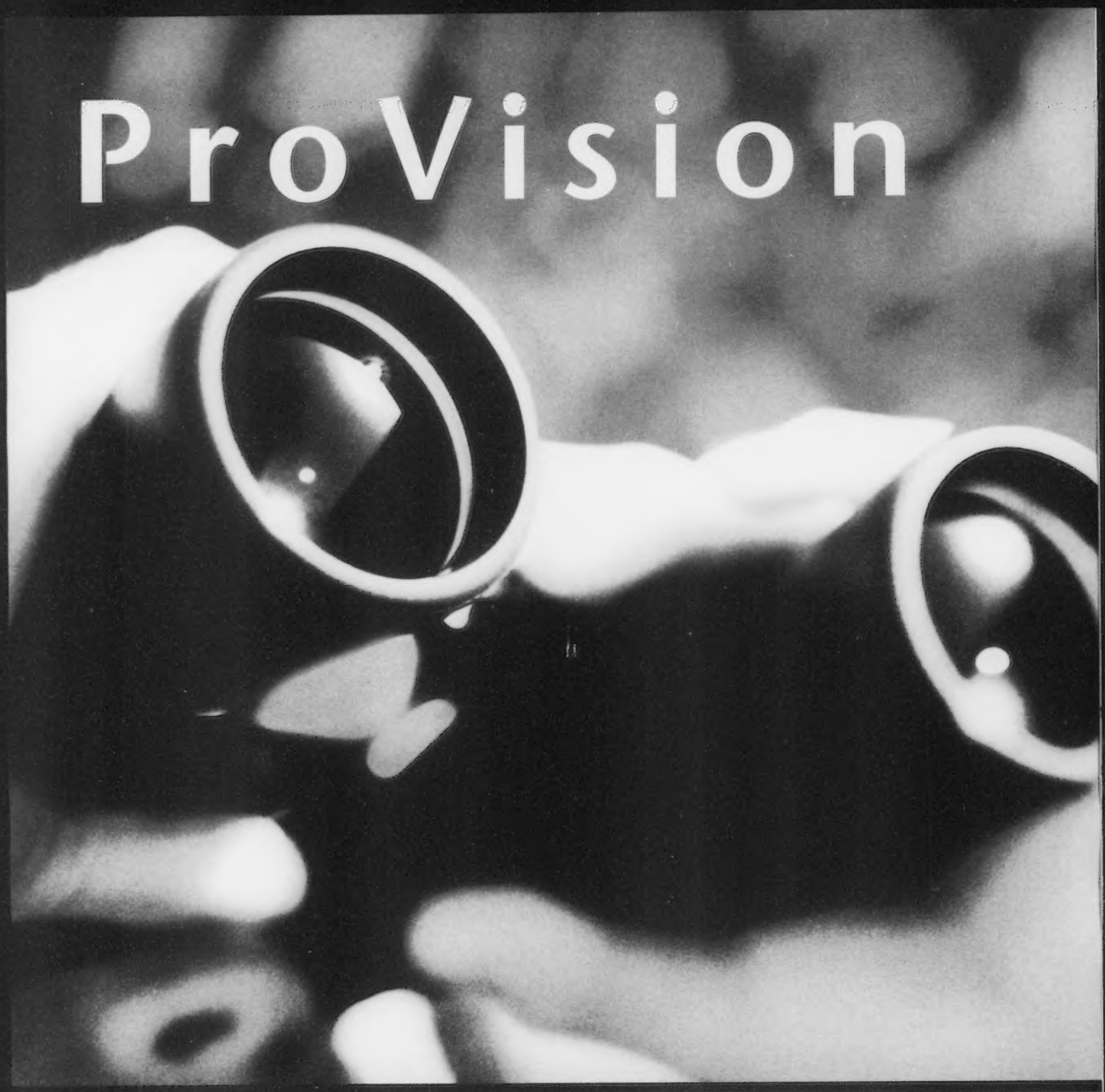

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Most widely used message devices:

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Fax machine	57%
Voice mail	48%
Pager/beeper	41%

Base: 810 users; multiple responses allowed; margin of error +/- 3.4%

Source: Yankelovich Partners Inc., Claremont, Calif.

Integration device

Fastcomm Communications Corp. last week announced Quick II/TermRouter, a device designed for companies that need to integrate legacy and LAN traffic on one network. The Sterling, Va., vendor's device converts older Unisys Corp. protocols and IPX into IP, while functioning as a terminal server and router. The Quick II can be configured with up to five serial interfaces. Pricing starts at $2,495.

Ascend takes stake

Ascend Communications Inc. in Alameda, Calif., last week took an equity stake of unspecified size in HydraWeb Technologies Inc., a server load balancing systems vendor in New York. Ascend will implement load-balancing functionality in its products, with the first units due out in the first quarter next year.

E-mail option

Intel Corp. is targeting small businesses with its EMail Station, a messaging appliance that can be connected to an Internet service provider through a router or external analog switch. Intel officials last week said the device was designed for businesses with fewer than 50 employees. Small businesses can use one Internet service provider account to support multiple users, officials noted. The product will be released Nov. 25 and will cost an estimated $699.

This LAN works on the slopes

By Matt Hamblen

WIRELESS LANs are generally used in warehouses or hospitals to overcome complicated, hardwired connections. But ski resorts in Vail, Colo., now are using one to improve service to skiers taking lessons.

WIRELESS COMMUNICATION

This winter, three dozen ski instruction supervisors will use wireless-equipped Casio Inc. Cassiopeia handhelds to give guests up-to-date information on where and when to meet their ski instructors.

The machines — networked using a PC Card and detachable antenna — will let supervisors revise schedules for up to 1,700 instructors without having to trudge through snow to get to a keyboard inside, officials said.

Vail Resorts Inc. tested a wireless network last year with Hewlett-Packard Co.'s HP 360LX handhelds. But this year, resort staff decided to switch to a handheld with no keyboard and a larger screen because it's easier for supervisors wearing ski gloves to use. Both use the Windows CE operating system.

"It's a great example of what technology can do to make work easier," said ski instruction supervisor Bruce Mark. "If I'm standing at the outside meeting place wearing my red coat and hooking up skiers with instructors, I don't have to flip through a 40-page pile of paper."

Instead, Mark said, he can use the handheld — connected live to the LAN — to click on a

LAN, page 52

STEPHEN RAMSEY

Vail Resorts ski school supervisor Bruce Mark (left) and IT outsourcer Mark Roebke use handhelds to aid scheduling

College invests $5M in net

▸ *WAN to cut costs, combine data, voice, video*

By Cynthia Bournellis

ATTRACTING STUDENTS to a university requires more than a scholastic reputation and campus charm.

That's why Widener University in Chester, Pa., is investing $5 million over the next five years to upgrade its shared Ethernet/Fiber Distributed Data Interface network to a high-speed, Asynchronous Transfer Mode (ATM) and Ethernet network that delivers data, voice and video traffic to 8,000 students and 700 faculty members.

"We may be a nonprofit, but we are no different than any business. . . . We have to deliver a service students can't get anywhere else for comparable or less cost," said Gary Habermann, Widener's director of technology resources.

The university also will save money. To date, Widener has spent $3.5 million on fiber-optic cable, copper cable and hardware and software upgrades. Carrying voice, data and video on one pipe will save Widener $1 million in wide-area network costs within five years, Habermann said. With the old network, WAN costs were $10,000 per month; now they're $8,000 per month and should drop to $2,800 in five years.

Widener students are able to gain valuable hands-on expertise building and fixing LANs

Students don't pay for network services when they use PCs or Macintoshes in the computer laboratories. Those who own their computers must buy a $99 network interface connection kit. There are 7,500 10M bit/sec. switched Ethernet ports installed throughout Widener's three campuses (two in Pennsylvania and one in Delaware), including student dormitories, conference rooms and cafeterias.

The connections tie in to the university's ATM backbone and let students and faculty members access high-bandwidth data such as digital video discs, videoconferencing, multicast video and Web-based materials.

One key service the network supports is a networking lab, which is part of the newly formed Computer Network and Data Communications track in Widener's electrical engineering program. In the lab, students gain hands-on experience building LANs and diagnosing and fixing problems.

The program was created to address the lack of enrollment in information technology courses. Habermann said the

College, page 52

Builders moving to Web tools

▸ *Architects drawn to project management*

By Roberta Fusaro

DESPITE A reputation for technological conservatism, more construction and architectural firms are taking advantage of Web-based project management.

For instance, one loves the technology because he can query a database at a project Web site and determine the color, style and material he needs to order for a particular job — before he gets there. So explained Charlie Kuffner, a division manager at Swinerton & Walberg, a San Francisco-based contractor.

Swinerton & Walberg is one of several contracting firms trying to save time and money by sharing information with subcontractors on secured Web sites. They can rent the space as needed without having to buy new hardware and software.

Builders, page 53

College

CONTINUED FROM PAGE 51

program has attracted more students than it can handle, and enrollment now is regulated to 20 per year due to the hands-on training. That training wasn't part of the previous curriculum, but it's in high demand among potential employers.

The university benefits here as well: In their final year, students work as apprentices on the university's network.

Widener's approach isn't unique. Campuses have long depended on students taking part in supporting and maintaining campus networks, said Kenneth Green, director of the campus computing project at Claremont Graduate University in Claremont, Calif.

The network also was designed to create partnerships with business and industry. In a joint effort with the city of Chester and Crozer Keystone Health System, Widener established the University Technology Park. Start-up businesses can access campus data such as research papers and graduate programs — as well as medical information from Crozer — at the technology park, which is connected to Widener's ATM backbone.

The network is built on networking hardware from 3Com Corp. and is managed by 3Com's Transcend networking software. As part of the upgrade, Widener replaced its older, emulation software-based PCs with new desktops and Web-based applications.

Widener's IT team wants to use the network to provide distance learning to businesses and homes. The university is in talks with Boeing Corp. on a project that could, "in theory," expand the on-site training Widener provides Boeing's technical employees to the Internet, said Raymond Jefferis, a professor of engineering at the university. □

Other colleges investing in technology:

- **The University of Miami in Coral Gables, Fla., is spending $7 million on a T3 network for 3,300 students with test trials for distance learning to homes over Asymmetric Digital Subscriber Line.**
- **The Anderson Graduate School of Management, the business school at UCLA, spent $12 million on an ATM backbone and 3,000 10Base-T nodes.**
- **The Colorado Electronic Community College in Denver spent $10 million on a digital multimedia lab.**

This LAN works on the slopes

CONTINUED FROM PAGE 51

customer's or instructor's name and get the location for a lesson instantly. That can be a blessing when he's trying to keep up with hundreds of skiers scrambling for information and lessons that cost up to $400 each. The handhelds can pull data from schedules on servers or PCs throughout the resort.

Such systems may not have a tangible payoff, but they can help service-oriented businesses hang on to customers, analysts said. "People pick a resort for the beauty of the mountains and the ski experience . . . so I'm not sure they'd pick a resort that has a wireless LAN. But it would help [Vail] with repeat business if the technology offers a higher level of customer service," said Fran Firth, an analyst at Cahners In-Stat Group in Newton, Mass.

Firth and two other analysts said the wireless LAN market has more than 70 vendors but is dominated by Mountain View, Calif.-based Proxim Inc.; the Wavelan Group, a division of Lucent Technologies Inc. in Murray Hill, N.J.; and Akron, Ohio-based Telxon Inc.'s Aironet.

The Vail system uses a RangeLAN2 wireless network interface card from Proxim. It fits in a standard PC Card slot on the handhelds and has a range of about 50 meters.

At each of 12 base stations, there are two Proxim receivers that connect to Microsoft Corp. SQL Server databases with the scheduling information, said Mark Roebke, a partner of Resort Technology Partners Inc. in Vail, an IT outsourcer for the resorts.

The wireless connections work during heavy, cold snowstorms, and the handhelds work "even though I've fallen on them several times," Mark said.

The only downside is that some supervisors resisted the change "because they were uncomfortable with how to use it and the fact that it's different than what we used to do," Mark said. "But after they use it, it's easy. If I can do it, anybody can." □

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Builders, architects make move to Web tools

CONTINUED FROM PAGE 51

According to the American Institute of Architects (AIA) in Washington, about 20% of the largest U.S. architectural firms use project-specific Web sites and about a third are using intranets. According to Heather Ashton, a senior analyst at Hurwitz Group in Framingham, Mass., the architectural/construction industry in the past few years has been replacing paper- and phone-based methods of connecting everyone on a project. Ashton said Web-based project management products such as Bidcom Inc.'s InSite, Blue-Line/On-Line Inc.'s ProjectNet LT and Framework Technologies Inc.'s ActiveProject 4.0 can make contractors more efficient.

> "We're spending less time at the fax machine and making fewer copies."
> – Charlie Kuffner, Swinerton & Walberg

Specific improvements include reductions in the time it takes workers to be notified of changes, lower costs for paper and paper shuffling and fewer errors — the latter of which is a big deal in the construction industry. According to the AIA, miscommunication in a one-year project could cost a design firm as much as $50,000.

There can be as many as 7,000 scope changes on a job, so real-time access to information via a hosted project Web site lets managers plan accordingly, Kuffner said.

Swinerton & Walberg is involved in about $1 billion worth of commercial, medical, biotech, critical facility and call center construction, he said.

Summit Architects is using Web-based workflow technology to manage its construction of Soka University of America (pictured above)

Swinerton & Walberg, which beta-tested BidCom's InSite, said it has reduced administrative costs by about 10% since it started using the system in November. "We're spending less time at the fax machine and making fewer copies," Kuffner said.

Andy Bell, president of Webcor Builders in San Mateo, Calif., said the industry typically has relied on computer-aided design software, gone through the trouble and cost of printing schematics and blueprints, and then sent them out via land mail — despite the fact that those documents may be changed many times before a project is complete. Webcor now is using Blue-Line/On-Line's ProjectNet LT in a pilot project for a 10-story office building. "We figured if they could be created electronically, why not route them electronically?" Bell said.

Kavita Gupta, a project manager at Summit Architects in Santa Monica, Calif., said her company is using BidCom's product to manage its construction of Soka University of America in Aliso Viejo, Calif.

The company is in the first phase of the 103-acre, 16-building project, which is estimated to cost $250 million or more. Gupta assigned a level of system access to each team member working on the project; they log in to the site and get the information they need.

"But they won't see information they don't need to see," she said. The advantage is a turnaround rate that's faster than faxes, which might get buried in a manager's pile, delaying work.

What took weeks by fax before now takes days via the Internet, Gupta said. And at the end of the project, the company gets a CD-ROM of all documents and plans, she added. □

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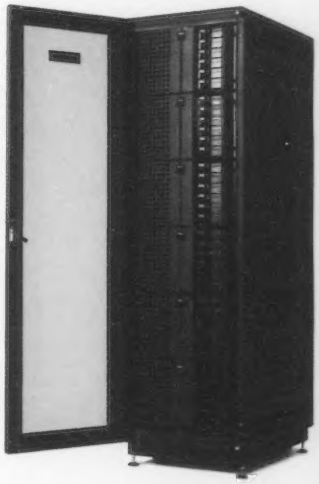

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Software

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Briefs

Oracle8i software

Several companies have announced plans to support Oracle Corp.'s new Oracle8i Internet-enabled database management system in their applications: A&I Technologies Inc. in Chicago, in its Time Series data management software; AvantGo Inc. in San Mateo, Calif., in its handheld-to-PC connection products; EMC Corp. in Hopkinton, Mass., in its backup management tools; and Forte Software Inc. in Oakland, Calif., in its forthcoming distributed application development tools. Also slated to support the system are GeoMicro Inc. in Santa Ana, Calif., in its AltaMap mapping tools; Imation Corp. in Oakdale, Minn., in its Media Manager 1.5 media-management tool; MapInfo Corp. in Troy, N.Y., in its MapXtreme spatial analysis program; and Sedona GeoServices Inc. in Limerick, Pa., in its SpatialVision data management tool.

XML development tool

Developers looking to manipulate the power of Extensible Markup Language (XML), but not wanting to change their infrastructure to do so, may benefit from a new open source development tool. The XML Extractor was developed by News Internet Services in New York and will soon be published on the Web. It is a Java applet that learns the structure of information in a user's database and outputs specific data with XML-based syntax. The applet can access and extract information from any SQL, Access or other relational database.

Year 2000 Access fix

Serious Software Ltd. has released Acc-Fix 2000, which automates the correcting (not just reporting) of year 2000 problems in Microsoft Corp. Access databases. The tool converts Access forms, reports and import/export specifications to four-digit year formatting and adjusts input masks automatically. The tool costs $349.

PeopleSoft alters delivery, delays upgrade

By Craig Stedman

PEOPLESOFT INC. is adopting a two-pronged delivery strategy that splits its back-office software from upcoming data analysis and intranet applications.

One immediate result is a change in the release plan for its PeopleSoft 8 back-office upgrade, which was put off from next year to mid-2000.

PeopleSoft 8 is due to add key features such as expanded application-integration technology and Europe-specific payroll support.

But several of those who attended PeopleSoft's user conference this month said the delay isn't too vexing.

Many companies are just making plans to upgrade to PeopleSoft 7.5, which came out in June. And even though PeopleSoft's applications are year 2000-compliant, some users want to limit software installations next year as they wrap up date-change fixes on their other systems.

"I'm sure we were just going to take a leisurely look at PeopleSoft 8 next year anyway," said Michael Lamping, employee systems team leader at Chrysler Corp. in Center Line, Mich. Chrysler uses PeopleSoft's human resources software and plans to go to PeopleSoft 7.5 first, he said.

Officials at Pleasanton, Calif.-based PeopleSoft said their top priority is finishing the analysis and intranet applications that were previewed at the conference [CW, Nov. 9].

Some application programming interfaces targeted for PeopleSoft 8 may be released early, they added. □

Several users said the delay of the PeopleSoft 8 back-office upgrade isn't too vexing.

NASA app to cut costs

▸ *Helps controllers land planes faster, saves money*

By David Orenstein

DECISION SUPPORT software designed by NASA should help air traffic controllers land commercial flights more quickly and could eventually save $800 million per year in fuel costs and reduced delays.

The new applications are efficient not only in the air, but also on the ground. NASA developers made advanced use of a distributed software configuration management tool to ease the application development process.

Air traffic controllers should be able to land aircraft quicker with decision support software

NASA's applications are undergoing field tests at Dallas-Fort Worth International Airport and will be rolled out by the Federal Aviation Administration to the nation's 20 busiest airports during the next decade, said Michelle Eshow, software development group leader at NASA's Ames Research Center in Mountain View, Calif.

NASA's tools automate the complex calculations and decisions air traffic controllers must constantly make. When incoming aircraft are 300 miles away, controllers must decide how

NASA, page 57

Analysis tool means 'huge shift' for firm

By Craig Stedman

LIKE MANY OTHER companies, American Century Investments is looking to equip its workers with tools to analyze the data in its financial systems. But getting there isn't easy.

American Century, a financial services firm based in Kansas City, Mo., is beta-testing an upcoming cost-analysis application from PeopleSoft Inc., which it expects to start using for real early next year. The package will work side by side with the PeopleSoft financial applications American Century started using in January.

The analysis software will be "a huge shift for the organization," said Eric Bur, chief accounting officer at American Century. "This isn't just installing another fixed-asset system or something like that. We view this almost as a whole new accounting system."

AT A GLANCE

Company: American Century Investments

Headquarters: Kansas City, Mo.

Assets under management: $75 billion

Number of mutual funds: More than 60

Number of investors: More than 2 million

Other businesses:

- Brokerage for stocks, bonds and options
- 401(k) and other retirement plans
- Online investment tracking and trading

The company will have to do some heavy lifting to get em-

Analysis tool, page 57

Companies eager to test pay package

By Thomas Hoffman

AS PUBLIC companies scramble to calculate their earnings on time each quarter, compiling the amount they pay in sales commissions and bonuses — which often represent 15% of operating expenses — is proving to be a huge challenge.

The problem for most organizations is that there are few, if any, software packages that can effectively calculate such disbursements, much less determine the financial impact of launching a new compensation scheme.

Those are the main reasons Netscape Communications Corp. and a handful of other companies with big sales forces plan to beta-test a sales compensation system from Callidus Software called TrueComp. The system is expected to help users better manage variable accounting costs, such as sales compensation, by breaking complex

Pay package, page 57

Create Better Help Files in Half the Time

Blue Sky Software, Microsoft, and Computerworld Launch Free Nationwide Industry Forums

Whether you're a new user or experienced professional, keeping up with the constant changes in Help formats can sometimes seem overwhelming.

At the Help Authoring Forum – a free half-day seminar sponsored by Blue Sky® Software, Microsoft®, and Computerworld® – you'll learn how to efficiently create high-quality Help systems that will improve user satisfaction and productivity while reducing Help Desk, tech support, and training costs.

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The Help Authoring Forum will be held in 50 cities in the U.S. and Canada, including:

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Chicago	Nov. 12, 1998
Toronto	Nov. 13, 1998
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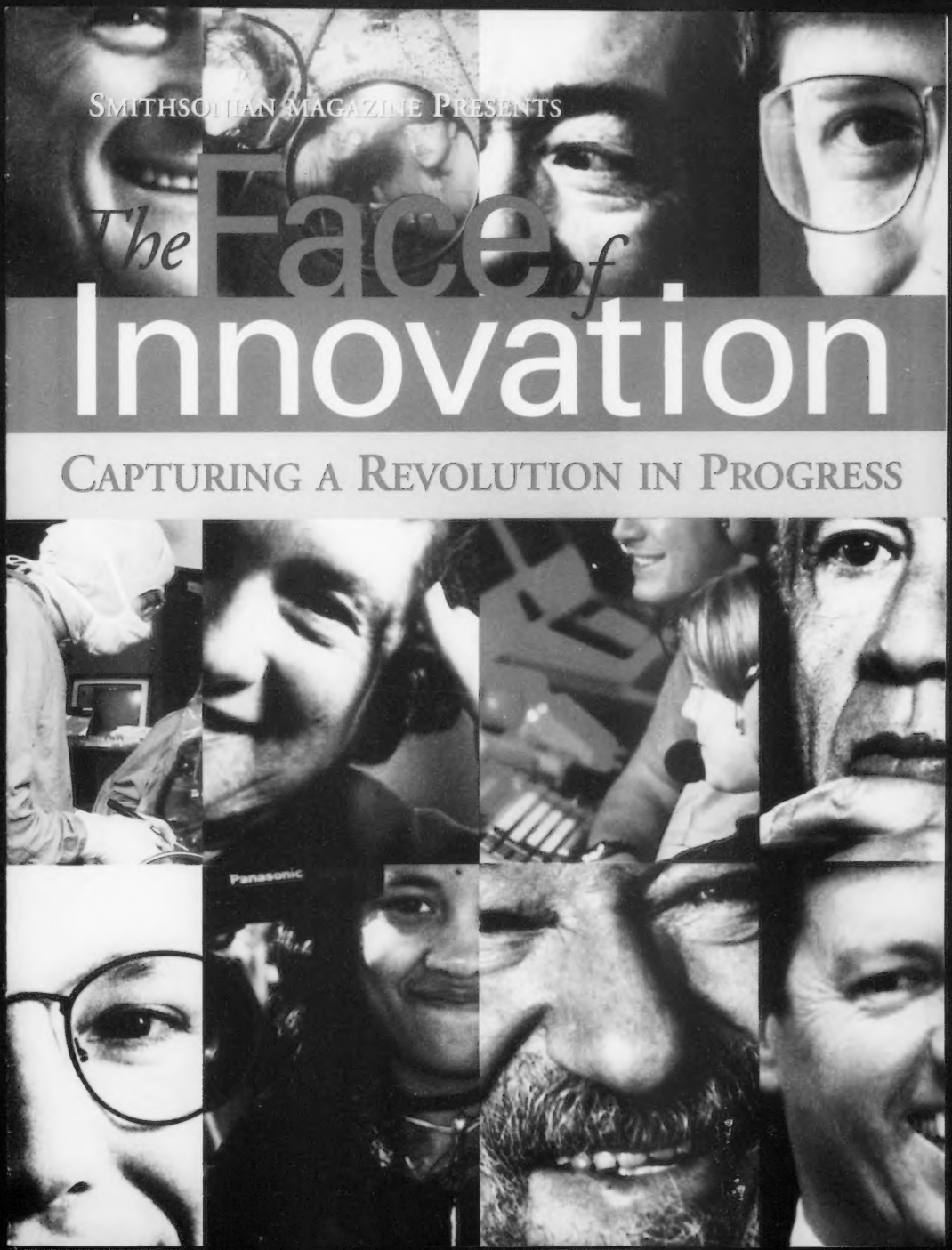
SMITHSONIAN MAGAZINE PRESENTS
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The Face of Innovation

A Letter from Dr. Spencer Crew
Director, The National Museum of American History

Change can be invigorating; it can also be unsettling. In a time of rapidly accelerating change, it is increasingly a challenge for us at the National Museum of American History to accomplish our Smithsonian mission, to "increase and diffuse knowledge" about how society changed and evolved in our times. To ensure that the museum is able to master the challenges that our rapidly changing future presents, we have initiated a capital capaign for the 21st century to allow us to employ the newest technologies for preservation and exhibition; keep our exhibits current and vital; and continue to collect and preserve important artifacts and knowledge of our time.

We are extremely fortunate that, over a decade ago, Patrick J. McGovern, founder of International Data Group, had the foresight to invite a group of information technology leaders to help us recognize and document how individuals are using new information age tools to create positive change. You will meet a few of these exceptional individuals on the following pages, and, you may meet all 2,648 of them by visiting our web site at http://innovate.si.edu.

We are immensely grateful to these Computerworld Smithsonian Laureates for taking up new tools to craft a better future for us all. Because the case studies of their work now reside in our Museum's Permanent Research Collection, citizens from around the world who share the ambition to create positive change are now building on their ideas to amplify and extend the benefits of technology. Through this exceptional public-private partnership, we at the National Museum of American History are able to record history almost as it happens, while we continue to stimulate the very spirit of innovation and creativity that improves the world in which we live.

On behalf of the Museum's Board and staff, we look forward to many more decades of collaboration on this important program, and to many more chapters in this unique partnership. More than anything else, visitors to our Museum learn that history is a record of change, and that through understanding the process of change, individuals can exercise their influence on the course of history.

Scott McNealy, Co-founder and CEO of Sun Microsystems, pictured here with his son, is the recipient of the 1998 Ernst & Young Leadership Award for Global Integration.

Knowledge Network

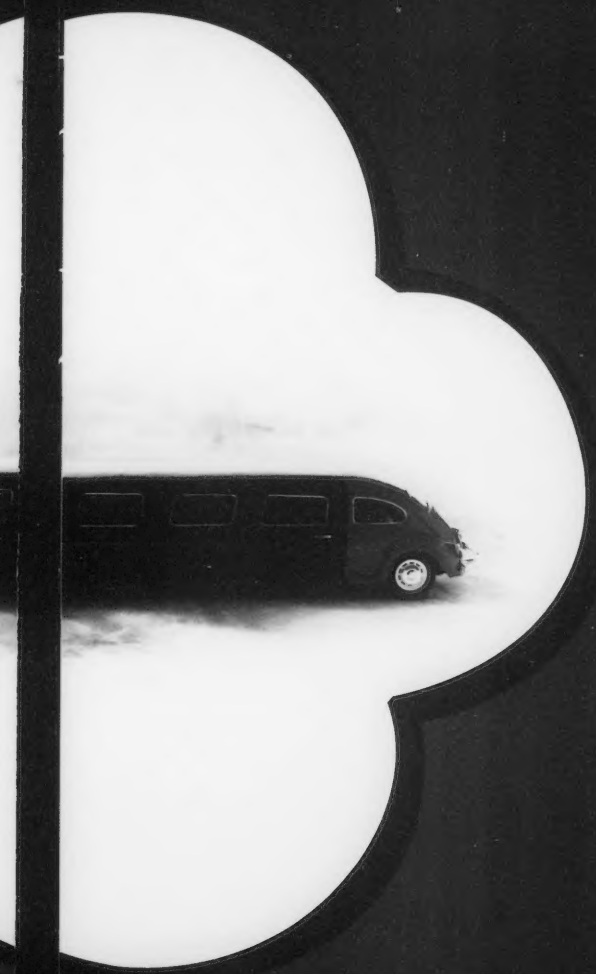
Scott McNealy's competitive spirit is deeply rooted in his love of sports. He fondly remembers the coaches who pushed him to excel and be a responsible team member. His mission today is to have every man, woman and child on earth connected to a high speed, broadband network. He is determined to ensure that "...everybody will stand on the knowledge and capabilities of everybody else on the network."

Kid Witness News

Early Scoop on Learning

The media enjoy an excellent reputation at Brooklyn's Public School 41, where making news is helping inner city students exceed expectations. Panasonic's commitment to provide 200 elementary and junior high schools with complete state-of-the-art video production studios has created an enthusiasm for learning in the classroom that makes students compete to participate in classes, and made Jeff Goldstein and his P.S. 41 students the recipients of a 1998 Computerworld Smithsonian Award for Education.

On the cover from left to right, top to bottom are - Seymour Cray, the JASON Foundation, Ellis Evans, Bill Gates, Howard A. "Hap" Paul, Linda Roberts, the JASON Foundation, Andrew Grove, Frederick Haushear, P.S.41, Seymour Papert, Scott McNealy



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NEW MODELS

I hear and I forget. I see and I understand. I do and I remember. - **Chinese proverb**

For centuries, lecturers in medical school classrooms communicated primarily through the spoken word. Now, computers are turning those words into images that doctors can see, and simulations that they can actually practice on. The gains are immense. And for those of us who, because of disabilities, have trouble seeing or doing what others see and do, these same computers are giving us more control over our lives.

Brain

When Peter Larsen was shot through the center of his brain he was listed as comatose. But when his wife looked into his eyes she knew instinctively that his brain was still active, he was just trapped in an unresponsive body. It took LC technologies to enable a computer to gaze into Peter's eyes to reconnect him to the world. Just as re-nowned physicist Stephen Hawking uses a finger-driven cursor to communicate, this computer translates eye movements into cursor movements allowing Larsen to communicate with his wife. Soon we will have technology to help those who can neither move an eye nor lift a finger.

1998, University of Utah,
Visualization of an epileptic seizure

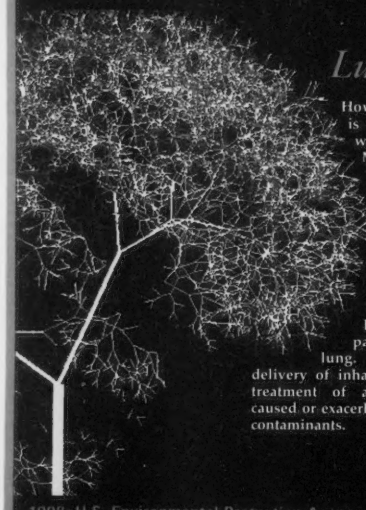
Heart

"One of the most scientifically exciting moments of my life," Ray Winslow of Johns Hopkins remembers, "was when I first viewed the simulation results of our very first large-scale cardiac heart model." To Winslow it illustrates the mystery, and the power, of computing--enabling us see and understand how nature works at a level of detail and beauty that had never been seen before.

1998, University of Utah,
Flow of Electrical Current from the Heart

Lungs

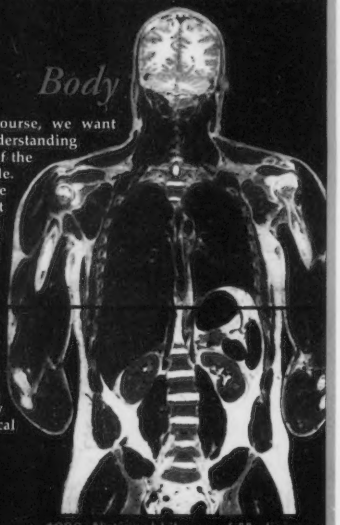
How we breathe is affected by what we breathe. Dr. Ted Martonen of the EPA's National Health and Environmental Effects Research Laboratory is tracking the way pollution particles travel through, and lodge in, the passages of the lung. Models target delivery of inhaled drugs in the treatment of air-way diseases caused or exacerbated by airborne contaminants.



1998, U.S. Environmental Protection Agency,
Supercomputer Simulations of the Human Lung

Body

Ultimately, of course, we want to deepen our understanding of the wonders of the body as a whole. The Visible Human Project at the National Library of Medicine is a major step forward in this quest, providing a detailed image of the body, in three dimensions, which allows learning to open a new chapter of medical breakthroughs.



1996, National Library of Medicine,
Visible Human Project

Cray, Founder of Cray Research, recipient of the 1994 MCI Leadership Award for Innovation, is widely recognized as the father of supercomputing.

New Sources of Information Are New Sources of Innovation: You Are Never Too Young or Too Old To Reach Out To Them

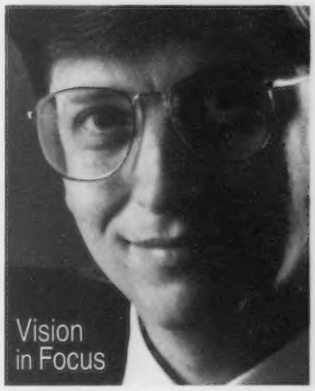
In the Information Age, we all have the opportunity to connect to totally new sources of information. Like Bill Gates, we are never too young. Like Seymour Cray, we are never too old.

When Bill Gates was in 7th grade, Seymour Cray was already a legend in the computer industry. The father of the supercomputer, he would go on to found Cray Research and Cray Computer. But by the late 1980s, he too came to believe that the computer industry was on the wrong track. Shouldn't future computer architecture be modeled more on biology, he asked.

Information about biology was as scarce in a computer company as information about computers was in Gates' middle school. But when Gates couldn't find the information he wanted about computers and business, he developed his own sources.

Cray also had to develop his own sources. To his delight, he found what he needed on an obscure new source called the Internet, where he was welcome to listen and learn as biologists were sharing their ideas.

Shortly before his tragic death, Cray discussed his experiences and hopes for the unconventional in a Smithsonian Monticello Memoir Lecture. Like Gates' 7th grade classmates, Seymour's colleagues in computer architecture agreed his ideas were way off base. To the young University of Virginia students in his audience Cray's ideas made perfect sense. Bill Gates now leads the worlds largest company and Cray's colleagues are seriously focused on biology as a metaphor for business.



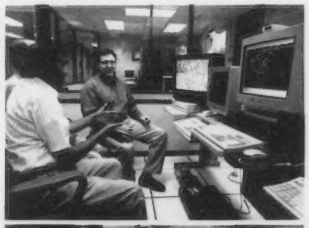
Gates, Chairman and Co-founder of Microsoft Corporation, recipient of the 1993 Price Waterhouse Leadership Award for Lifetime Achievement, is one of the most influential figures in the PC and software industry.

Breakthrough Science

Dr. Frederick Hausheer
Founder, Chairman and Chief Executive Officer, BioNumerick Pharmaceuticals, Inc.

"I've taken care of a lot of patients. I've seen a lot of people die. That's what drives me." Dr. Frederick Hausheer's determination to build better links from the laboratory bench to the patient's bedside goes back to his early years in Independence Missouri. His father was a doctor; however, it was his grandfather's death from cancer that focused his later interest in research.

Today, he heads BioNumerick, a pioneering firm that uses computers to design cancer therapies. Although the work is theoretical and highly research-oriented, Dr. Hausheer continues to maintain close links to patients. He believes that success in the fight against cancer requires a close link between the bench and the bedside.



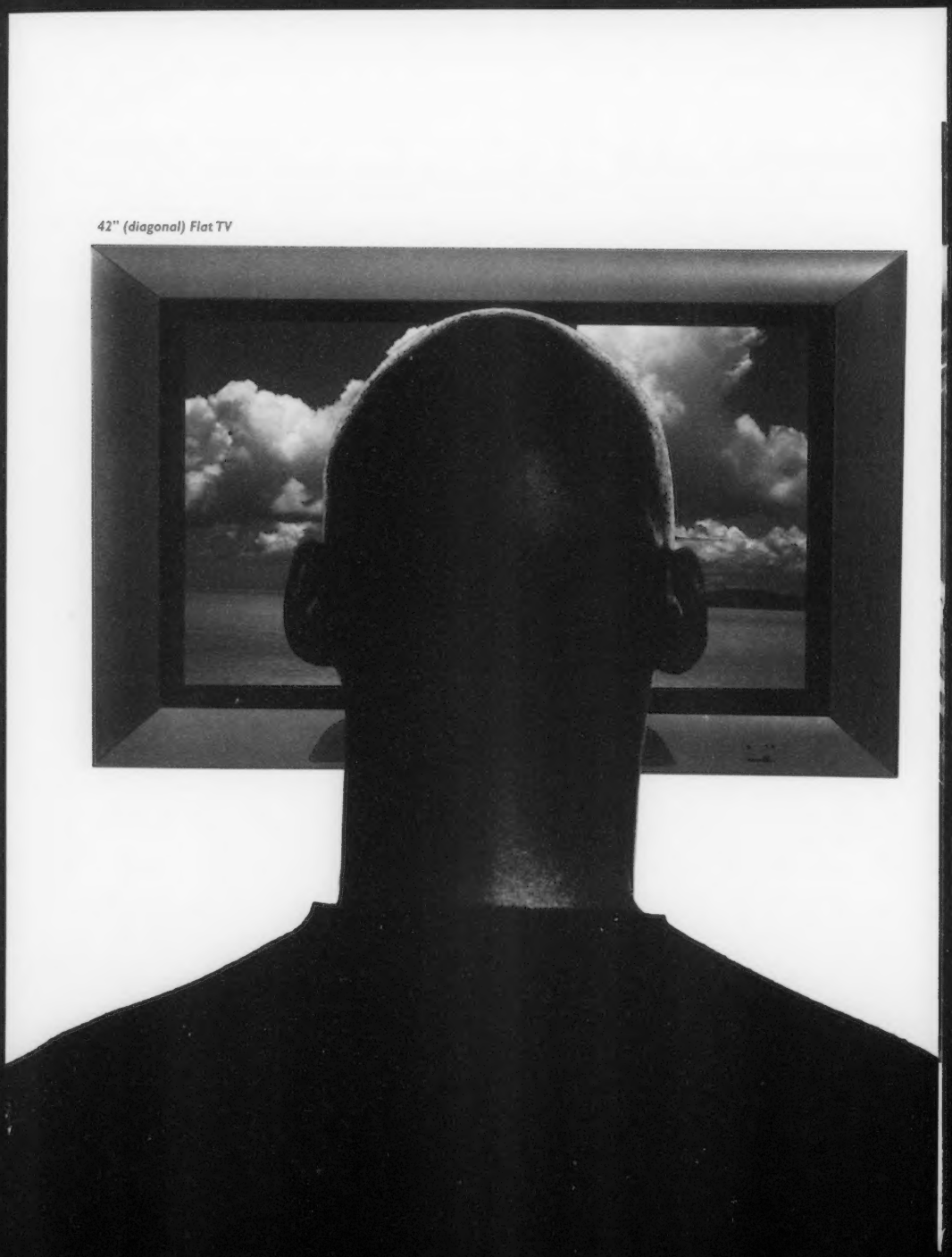
Hausheer, top right, recipient of the 1997 Silicon Graphics/Cray Research Award for Breakthrough Science, is harnessing the power of supercomputers to discover new drugs to fight cancer.

Relationship Revolution

When Technology Solutions Company recognized Scott Eckert of Dell Computer as a 21st Century Pioneer, they underscored the power information technology can have on relationships. Eckert's assignment from his chairman, Michael Dell, was simple. . . Use the web to improve the way we respond to our customers. Eckert's solution – let the customer design the computer on-line before we build it, deliver it in record time and provide impeccable service --is definitely working. . . and, because they design it themselves... requests for help are on a steep decline.

Eckert, Director of Dell Online, is the recipient of the 1998 Technology Solutions Company 21st Century Pioneer Award.

42" (diagonal) Flat TV



The Philips Display Collection

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Fellini LCD projector

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SVGA TV with CrystalClear II technology creates an amazingly sharp picture, and the Fellini LCD projector's high resolution capabilities are as close as you can get to true multimedia home theater. And if you want to go beyond movies, WebTV® Plus with new WebPIP™ allows you to watch TV and be connected to the Web simultaneously.

I've got to admit it's getting better.

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32" (diagonal) SVGA TV

*Tuner housed in separate unit. All on-screen images are simulated. WebTV and WebPIP are either trademarks or registered trademarks of WebTV Networks, Inc.

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Let's make things better.

Outreach

On Mars

"That's one small step for a man, one giant leap for mankind." You no doubt remember whose living room you were in when you heard those words. With Mars, it has been different. Chances are, you were in front of a web browser. The Mars Pathfinder Web site delivered near real-time images of Mars to home computers around the world 500 million times the first month. Disseminating history as it happened, it was at the time, the largest such movement of information in history.

Intergalactics

One of the most compelling questions of our time is whether or not we are alone in the universe. If Carl Sagan was right, intelligent life is out there, trying to reach us. It, therefore, behooves us to listen. If radio emissions are arriving from nearby galaxies, Stuart Bowyer of SETI, the Search for Extraterrestrial Intelligence, will hear them, and when he does, you'll be the first to know.

Ivan Sutherland and Dave Evans, co-founders of Evans & Sutherland and pioneers of visualization techniques, received the 1996 Price Waterhouse Leadership Award for Lifetime Achievement.

Seeing is Believing

Ivan Sutherland and David Evans

A Picture is Worth a Thousand Breakthroughs

Three decades ago, when David Evans and Ivan Sutherland began working on computers, few had screens, and "computer graphics" was an oxymoron. The revolutionary techniques they developed now allow computerized visualization and modeling that is used to predict product design behavior. Without these breakthroughs in visualization, mass computer usage would not have become a popular phenomenon.

Knowledge Dissemination

Tim Berners-Lee

Tim Berners-Lee grew up with machines, in an environment where innovation was in the air. "Our house was full of five-hole paper tape and mathematics," recalls Mr. Berners-Lee of his childhood in England. His parents, both mathematicians, helped develop the Mach-1, one of the first computers to be marketed commercially. As a boy, Mr. Berners-Lee devised mechanisms to remotely-control toy trains; he built a computer using a calculator keyboard rescued from the trash and rigged an intercom to link his bedroom to the attic and the kitchen. Years later, he developed the first Web server and the first client-side application, a wysiwyg hypertext browser/editor.

Berners-Lee, Director of WC3 and recipient of the 1997 MCI Leadership Award for Innovation, is widely recognized as the father of the World Wide Web.

The Emancipation of Education

Art

Computer animation created the highly-acclaimed animated movie, *Toy Story*. Establishing a new creative platform for future movie makers.

Bologna

Soon you will be able to stroll through the virtual city of Bologna, today, a thousand years ago, or any date in time.

Seymour Papert
LEGO Professor of Educational Research, Massachusetts Institute of Technology

"Every maker of video games knows something that the makers of curriculum don't seem to understand. You'll never see a video game advertised as being easy. Kids who do not like school will tell you it's not because it is too hard. It's because it's--*boring.*"

Papert, received the 1997 NEC Leadership Award for Education, for his pioneering research on child-computer interaction.

Blake

When William Blake wrote his *Songs of Innocence*, he meant for them to be read in the presence of elaborate illustrations, but the images were too expensive to print. Now, CD-ROM technology is making Blake's creativity whole again.

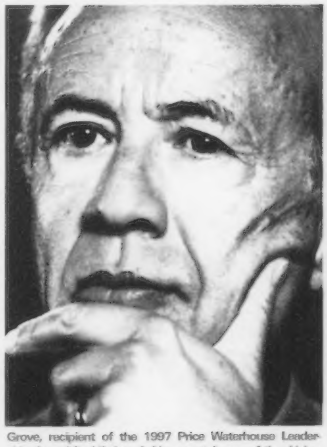
Future

Virtua Fighter®, from Sega Enterprises, is more than just a great game. It is a window into what all computing will look like in the years to come: vivid, immersive, three-dimensional, and able to respond to the user in a smooth and life-like way.

Revolutionary Progress

Andrew Grove's path though life has often crossed uncharted waters. Born in Budapest in 1936, he survived the Nazi occupation and fled Hungary during the 1956 Communist invasion, arriving in New York City with little more than a head full of dreams.

At City College, Dr. Grove so excelled in his studies in chemical engineering that his teachers encouraged him to pursue an academic career. After earning a Ph.D from the University of California at Berkeley, Dr. Grove took a risk and joined a maverick startup known as Fairchild Semiconductor. Not long after, Gordon Moore--Dr. Grove's colleague at Fairchild--shared with him plans for a new company. Before Moore finished speaking, Dr. Grove had volunteered, and Intel was born.



Grove, recipient of the 1997 Price Waterhouse Leadership Award for Lifetime Achievement, is one of the driving forces behind the evolution of the microprocessor.

Trends Indicate
The Best is Yet to Come

by James Bailey

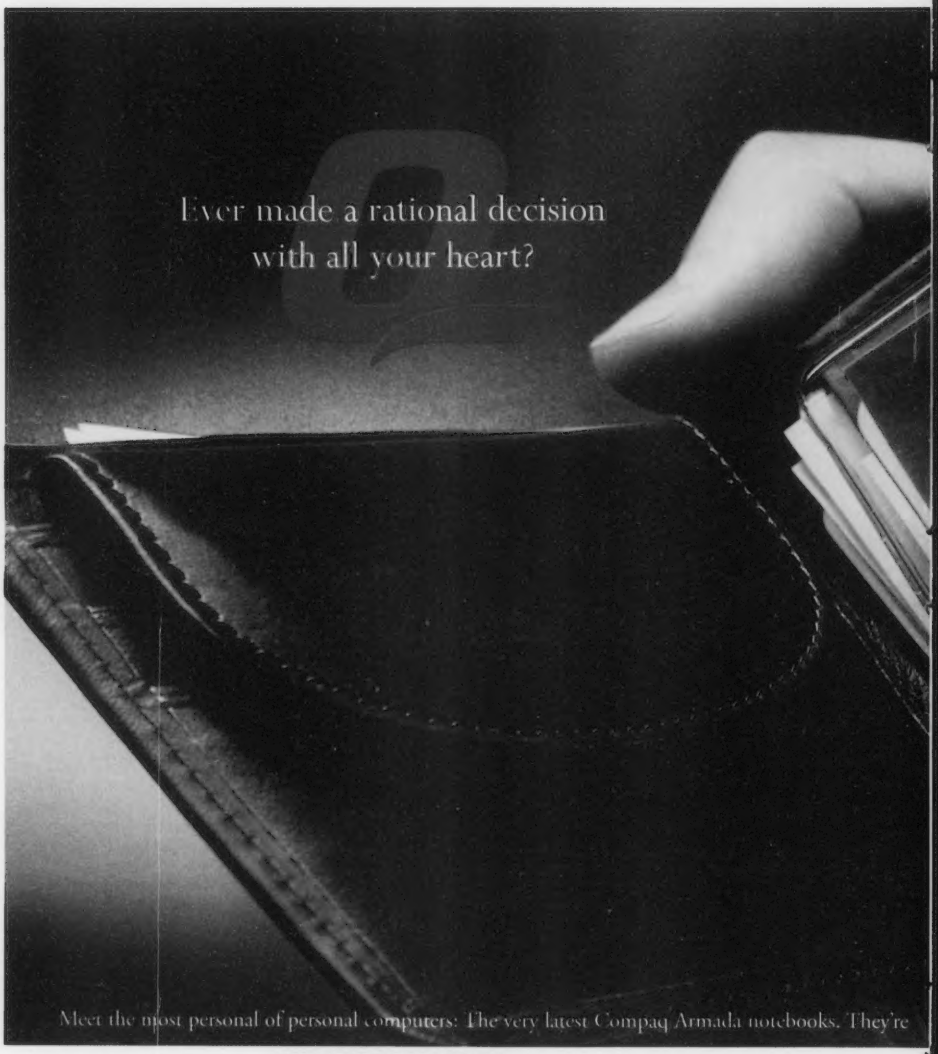
Taken individually, innovations in the field of Information Technology have the power to astonish. But what do they all add up to? How important is Information Technology as a whole? Is it like the invention of agriculture, or indeed the invention of language? These innovations were so profound that we cannot truly connect to what life must have been like before them. They created a civilization rather than just altering it. Or is Information Technology like the automobile, or the telephone? Both changed our lives, but not life itself. It is still possible to understand what things were like before we had them.

As the Smithsonian highlights specific achievements in the use of information technology each year, it also deepens its role as the place to go to ask bigger questions. The Smithsonian is a place where any of us, using our web browsers, can see what has happened over the past decade. Are you a seventh grader as Bill Gates was when he was sending away for computer brochures? Are you approaching retirement age as Seymour Cray was when he took up biology? Either way, here is some of what you will find in the Collection as we all ask, "how big is the Information Technology revolution?" Perhaps the results of your own investigation will find trends that others have missed.

Rapid Advances

One sure way to measure the ultimate impact of the Information Age is to look at what young people are doing with it. The changes here in just a decade have been startling. In the late 80's and early 90's, the dominant educational activity in the Permanent Research Collection was "computer literacy," also known as "computer appreciation."

Today terms like "computer literacy" are no longer part of our vocabulary and for good reason. Today's students are leading, not following. The most knowledgeable and aggressive users of the Internet are now high school students. Basketball coaches are no longer the only faculty members faced with students who could turn pro right out of high school. Computer whizzes are now getting their own lucrative offers to go straight into industry.



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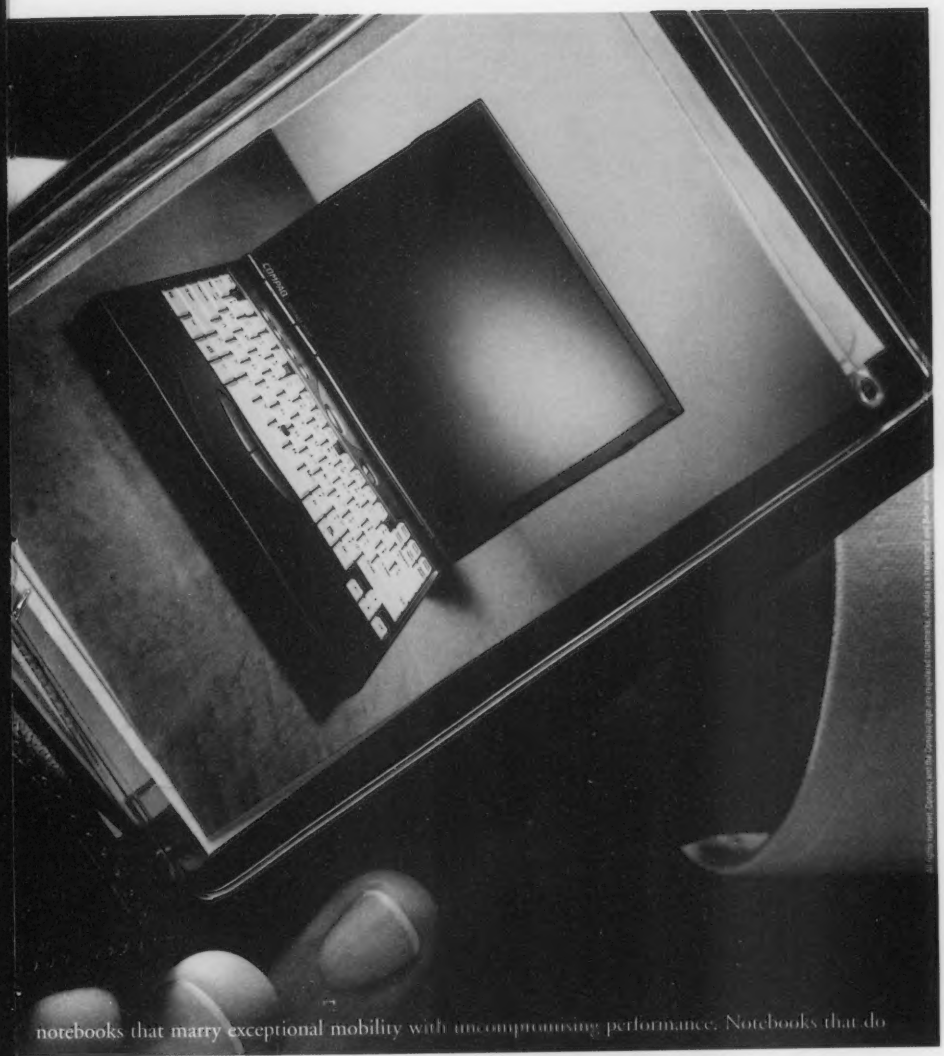

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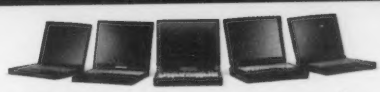


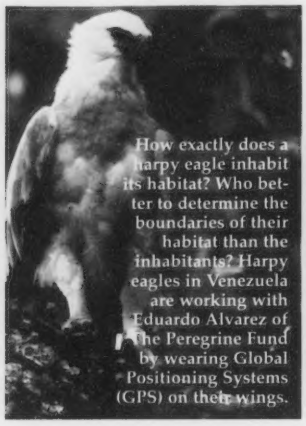
The New Compaq Armada.

intel inside

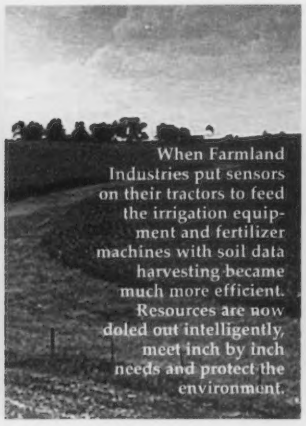
pentium II

A Living Sense of Place

Old-fashioned maps show the forest, but not the forest fire; the nest, but not how the eagle chooses the nesting site; the farmland, but not the crop height. Today maps are alive. Connected to sensors in the forest, on the eagle, behind the farmer's tractor, they tell a real-time story about current status and projected needs.



How exactly does a harpy eagle inhabit its habitat? Who better to determine the boundaries of their habitat than the inhabitants? Harpy eagles in Venezuela are working with Eduardo Alvarez of the Peregrine Fund by wearing Global Positioning Systems (GPS) on their wings.



When Farmland Industries put sensors on their tractors to feed the irrigation equipment and fertilizer machines with soil data harvesting became much more efficient. Resources are now doled out intelligently, meet inch by inch needs and protect the environment.

Because koalas are very particular about their habitat, they rely on a sophisticated satellite system to intercede on their behalf with land planners in Australia. Because this technology is powerful enough to identify specific trees, it is opening a new era of conservation according to Deborah Tabart the visionary who leads the initiative.

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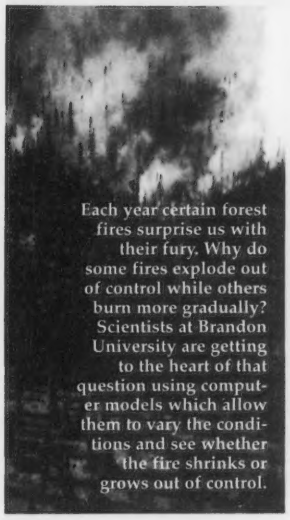

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Whether in laparoscopic surgery or in ROBODOC, the change in surgeon viewpoint goes far beyond the mere shift within the operating room. Because the information is presented on a video screen, the viewer need not be in the operating room at all. Given sufficient bandwidth, the viewer can be a thousand miles away. More than that, the remote viewer can be more than just a passive spectator. Since the connection to the surgical instrument is also electronic, the remote viewer can be the surgeon. For now, this capability is being used largely for training purposes. Skilled laparoscopic surgeons are plugging in remotely to monitor and advise surgeons who have adopted the techniques more recently. Ultimately, there may be no need for both surgeons. Patients may prefer the more experienced surgeon to the more present one. Globally, surgery bids fair to become an export industry, as was first noted at the Smithsonian Medical Symposium in 1996.

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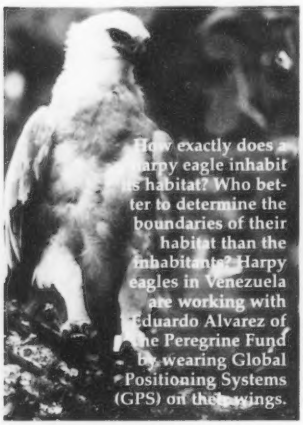

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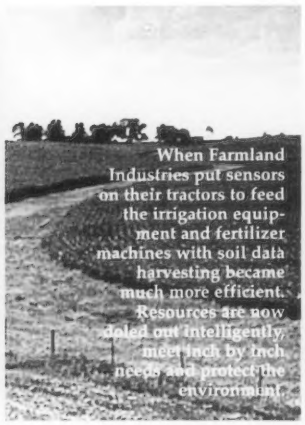

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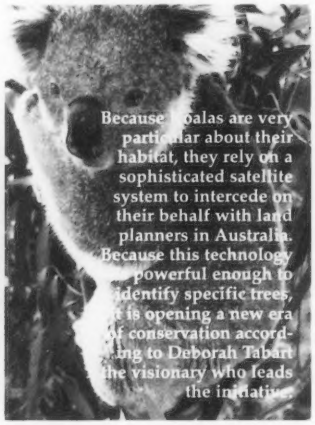

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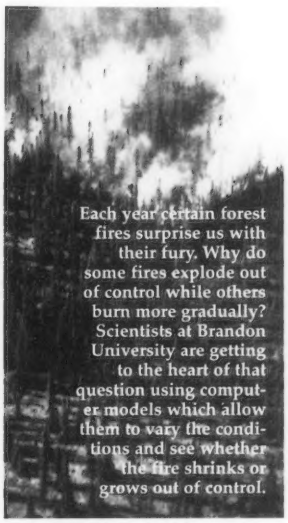

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the first biofidelic crash test dummy...
Who introduced the first infant safety carrier...
Who designed the first traction control system...
Who pioneered the side-guard door beam...
And who developed the first child restraint system...
Have seen the results of their efforts
In over 200 million cars and trucks
From over 25 different manufacturers.
All because the people of one company believed
That nothing could be more important
Than helping to save lives.

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Information Age in the Bookbag

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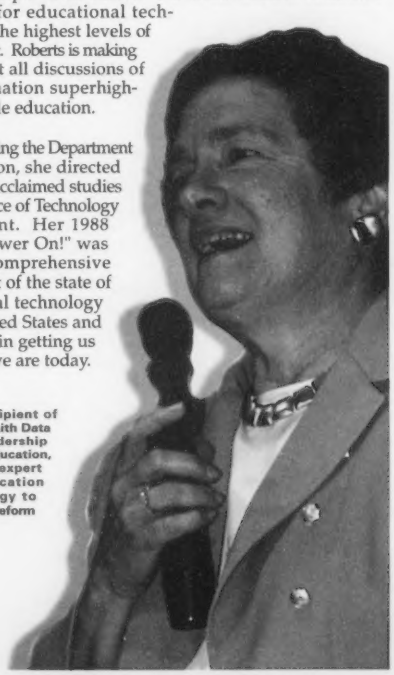
Championship Thinking

Linda Roberts
Director, Office of Education Technology
United States Department of Education

How does the U.S. government ensure that technology, as it evolves, will be put to use in American classrooms to improve education? Via Linda Roberts: America's advocate for educational technology at the highest levels of government. Roberts is making certain that all discussions of the information superhighway include education.

Prior to joining the Department of Education, she directed a series of acclaimed studies for the Office of Technology Assessment. Her 1988 report "Power On!" was the first comprehensive assessment of the state of educational technology in the United States and a key step in getting us to where we are today.



Roberts, recipient of the 1995 Zenith Data Systems Leadership Award for Education, is a leading expert in the application of technology to improve and reform education.

A Search for New Heroes

The Computerworld/Smithsonian Program searches for individuals who use information technology to benefit society and honors them for their achievement. Each year their stories become part of the Smithsonian's Permanent Research Collection.

The chairman of the following companies have graciously served on the nominating committee during the past decade:

3Com Corporation • Acer America Corporation • Adobe Systems, Inc. • AGS Computers, Inc. • Amdahl Corporation, America Online, Inc. • Andersen Consulting • Apollo Computer • Apple Computer, Inc. • Arthur D. Little, Inc. • Ascom Timeplex • ASK Computer Systems • AT&T Corporation • Banyan Systems, Inc. • Bay Networks, Inc. • BBN Corporation • Bell Atlantic Corporation Bellcore • BMC Software, Inc. BoozAllen & Hamilton, Inc. • Borland International, Inc. • Bull HN Information Systems, Inc. • Candle Corporation • CIMLINC Incorporated • Cincom Systems, Inc. • Cisco Systems • Comdisco, Inc. Commodore Business Machines Compaq Computer Corporation CompuServe • Computer Associates International, Inc. • Computer Corporation of America • Computer Motion, Inc. Computer Task Group, Inc. Computerworld • Compuware Corporation Control Data Corporation • Coopers & Lybrand • Cray Research, Inc • .DB Software • Data General Corporation • Datapoint Corporation • Dataproducts Corporation • Dell Computer Corporation • Deloitte Consulting Diebold, Incorporated • Digital Equipment Corporation • Easel Corporation • Eastman Kodak Company • EDS • EMC Corporation • Epson America, Inc. • Ernst & Young, LLP • Evans & Sutherland • Excalibur Technologies • FileNet Corporation • Gandalf Technologies • Geac Smartstream GTE Internetworking • Hayes Corporation • Hewlett-Packaxrd Company • Hitachi Data Systems Hughes Network Systems • IBM Corporation Information Builders, Inc. • Informix Software • Ingres Corporation • Intel Corporation • International Data Group JD Edwards • KPMG Peat Marwick, LLP • Kurzweil Applied Intelligence • Legent Corporation • Lemout & Hauspie • Lexmark International, Inc. • Lockheed IMS Lotus Development Corporation • Madge Network Systems MAI BASIC FOUR, Inc. • Management Science America, Inc. • Matsushita Electric Corporation of America • McData Corporation McDonnell Douglas Systems MCIWorldCom • Microcom Microdyne • Microsoft Corporation Morgan Stanley & Co., Inc. • Motorola, Inc. • National Advanced Systems • NCR Corporation • NEC Technologies, Inc. NetFRAME Systems, Inc. • Netscape Communications Corporation • NeXTComputer, Inc. • Nolan, Norton & Co. • Northern Telecom Novell, Inc. • NYNEX Corporation • On-Line Software, Inc. • OneWave, Inc. • Oracle Corporation • Packard Bell NEC, Inc. • Panasonic Communications & Systems PeopleSoft, Inc. PictureTel • Platinum Technology, Inc. • Price Waterhouse • Red Brick Systems, Inc. • Relational Technology, Inc. • SAIC • SCO • SAP America, Inc. • SAS Institute, Inc. • Sequent Computer Systems, Inc. • Shared Medical Systems Corporation • Siemens Business Communication • Silicon Graphics, Inc. • SMS Corporation Software AG of America, Inc. • Software Engineering of America, Inc. • Sprint • Stardent Computer, Inc. • Sterling Software, Inc. Storage Technology Corporation • Stratus Computer, Inc. • Sun Microsystems, Inc. • Sybase, Inc. • Symantec Corporation • Syntex Technologies • Systems Center, Inc. • Tandem Computers Incorporated • Tandy Corporation • Technology Solutions Company • Texas Instruments • Toshiba America Information Systems U.S. Robotics, Inc. • UB Networks, Inc. • Unisys Corporation UNIX Systems Laboratories • Wang Global, Inc. • Wellfleet Communications, Inc. • Wyse Technology • Xerox Corporation • Zenith Data Systems

Patrick J. McGovern, Chairman of International Data Group, and Roger Kennedy, then Director of the Smithsonian's National Museum of American History, founded the Computerworld Smithsonian Awards in 1988.

Computerworld was founded by McGovern in 1967 to serve the new, rapidly evolving needs of information technology leaders.

The Innovation Network, the official Internet site of the Computerworld Smithsonian Program, is made possible by a generous grant from MCIWorldcom. Visit the CWSA Laureates and learn more about their innovations at http://innovate.si.edu.

To learn more about the Computerworld Smithsonian Program, contact Jen Adams by e-mail, cwsa@cudaback.com or call (617) 478-2704.

James Bailey, author of *After Thought*, is an independent scholar who lives in Arlington, Massachusetts. Section design by Liza Parks.

Tom Lippert is the photographer of record for the Program, and is responsible for the majority of images in this section. Other photographers whose work is included are Rick Vargas and Kathleen King. The remaining images were submitted to the Smithsonian Archives by the CWSA Laureates.

Credit card companies now use biologically-inspired algorithms such as neural networks to detect fraudulent credit card usage. These neural networks replace the old numbers and equations of physics.

Finally, there is the singular character of the human genome project–the detailing of our complete genetic inheritance. Within the Permanent Research Collection, it is installed as a single application alongside thousands of others. It is indeed a single application, but in its scope and its significance it can be considered bigger than all the others put together. It is being carried out on a world-wide scale, with the data pooled on the Internet and made available on a daily basis. Its effect on society will be total, because it implies the ability to routinely alter human life if society chooses to do so.

A New Fertile Crescent?

One of the most powerful lessons we learn from biology is that "history matters." In the short term, we keep on doing what we have always done, even as the world changes around us. Truly radical change is trans-generational. It comes with a new generation that never had any attachment to the older ways. It is in that context that we need to weigh the possibility that civilization itself is undergoing replacement.

Thirty years from now it is likely that, in advanced countries, every graduating high school senior will have their own laptop computer, and will have had it at least since junior high school. It is a certainty that the accumulated knowledge of the human genome project will have matured into everyday medical practice. The ability to alter human life will be well-established. Finally, the psychological barriers to action at a distance ("tele-everything") will be long gone. These changes alone do not guarantee a new form of civilization but they definitely open the door to the possibility.

The Information Age is more than just a new chapter in the history books. It may mean a whole new definition of history itself, one that is no longer carried in books at all, but in a much more dynamic medium. We may be in the formative stages of a whole new civilization, with Information Technology creating a crescent as fertile as any that have come before. Anyone interested in culture and the meaning of civilization should be paying close attention to Information Technology right now. ■

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NASA app to cut costs

CONTINUED FROM PAGE 55

best to merge the converging planes into a pattern that will land them on only a few fixed runways.

Controllers must consider which runways will be available and must avoid conflicts with other planes passing through the area, Eshow said.

The new Central Tracon Automation System (CTAS) tools can process the data and suggest plans to the controllers.

"The controllers agree with our decisions 90% of the time," Eshow said.

The software helps controllers land planes an average of two minutes sooner, saving both fuel and time, Eshow said.

John Hotard, a spokesman for AMR Corp., the parent of Fort Worth-based American Airlines, said the software still needs refinement but the airline believes it will save fuel and reduce delays.

NASA has spent more than a decade conceiving and developing the software.

In the past few years, it has teamed up with the FAA and contractors Computer Sciences Corp. and Sterling Software Inc. to refine CTAS.

In total, about 50 developers at five sites, from New Jersey to California, have been working on the application's 500,000 lines of C and C++ code.

To coordinate such a distributed development team, the three organizations are using the configuration management tool ClearCase from Rational Software Corp. in Lexington, Mass.

ClearCase prevents remote teams of developers from inadvertently working on the same problem and ensures that they don't undo one another's work.

The advantage of ClearCase over other software configuration management tools, Eshow said, is that the databases which describe the work being done by various project teams replicate easily, allowing each site to track not only its own work, but also that of other sites. "We can look at what others are doing at any time," Eshow said.

Also, she said, when the teams merge the revisions into the overall applications, it takes just a few staffers two days, which Eshow called very fast considering they are merging the work of 50 developers over eight weeks.

Competing tools include Micro Focus Group PLC's PVCS tools, Computer Associates International Inc.'s Endeavor, Continuus Software Corp.'s Change Management Suite and Platinum Technology Inc.'s CCC/Harvest.

Liz Barnett, an analyst at Giga Information Group in Cambridge, Mass., said many information technology organizations are just starting to look to software configuration management tools to coordinate highly distributed teams across the entire enterprise. "I think ClearCase is one of the better tools," she said.

The lack of such enterprise capabilities, she said, has made many other similar products "shelfware" of little actual use to customers. □

Eager to test pay package

CONTINUED FROM PAGE 55

issues into manageable pieces.

"How far out can you accurately project [the sales compensation] impact on expenses using Excel spreadsheet models and a lot of assumptions?" asked Brad Savage, sales reporting and compensation manager at Netscape in Mountain View, Calif.

Executives at San Jose, Calif.-based Callidus said demand for the software is so great that 30 companies have volunteered to participate in the five-member beta test. That has led Callidus to add a "beta associates program" for prospective customers, which is scheduled to begin in January. The product is expected to ship in late February. It will cost $300,000 for up to 400 accounts. Integration and consulting services will cost $150,000 to $250,000.

Lack of technology is hindering companies from doing these tasks:

Measuring profitability	56.8%
Reducing operating costs	52.9%
Moving to strategic advisor	50.2%
Positioning the company for profitable growth	43.2%
Developing cost management methods	41.5%

Base: Survey of 417 chief financial officers; multiple responses allowed

Source: Financial Executives Institute, Morristown, N.J., and Computer Sciences Corp., El Segundo, Calif.

NOT JUST HIGH-TECH

Although the initial beta participants are all in high-tech companies, the software can be used within any number of industries, including manufacturing, retail and financial services.

"I've talked to other [interested users] in the brokerage and insurance industries and [the software] is definitely transferable," said Savage, whose hope is to use the system in part to alleviate the amount of number crunching his company's three compensation analysts must do to support Netscape's 400-person sales force.

Another beta customer, Adaptec Inc. in Milpitas, Calif., currently has to calculate sales commissions from among six sources, including spreadsheets, invoices and purchase orders. Part of its interest in TrueComp is "to integrate all of this into one system and achieve some time savings" in calculating and distributing variable compensation, said Kim Macfee, a controller at the hardware components maker.

Trilogy Software in Austin, Texas, and Oracle Corp. offer sales effectiveness packages, "but they don't track variable compensation" as closely as Callidus is expected to, said Jim Holincheck, an analyst at Giga Information Group in Park Ridge, Ill.

Holincheck said he expects Pleasanton, Calif.-based PeopleSoft Inc. and SAP America Inc. to add variable compensation tools to their sales management systems as customers demand more detailed calculations. □

Analysis tool means shift

CONTINUED FROM PAGE 55

ployees ready for their new analytical powers, Bur added. The big tasks: training users and getting individual business units up to speed on "what this is and what sort of value they can get out of it," he said.

Managing the internal changes is the highest hurdle, "more than system issues," agreed Roby Shay, American Century's director of information technology. "There's a lot of buy-in required."

The payback is expected to be a better handle on the company's real cost of doing business in different investment markets. The new software — which other packaged-application vendors also are developing — is supposed to help users break down their spending more finely than standard finance systems.

For example, Bur said, American Century now can get only "crude estimates" of its selling and administrative costs across such diverse channels as telephone sales, online trading and dealings with third-party brokerages and 401(k) plan sponsors.

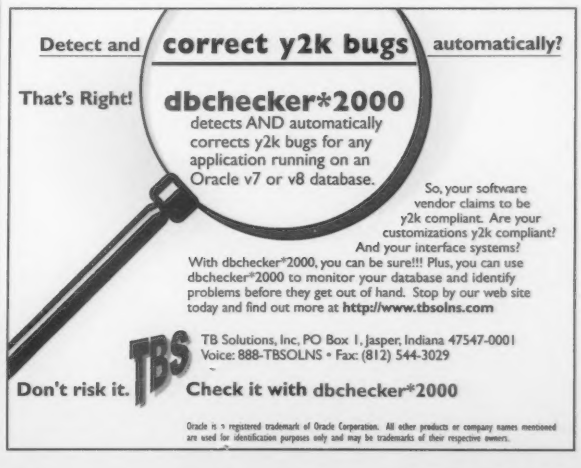
As a result, pricing decisions on mutual funds and investment services "are just made by intuition now," Bur said. Executives, Bur noted, also can't easily compare American Century's operations with those of its rivals.

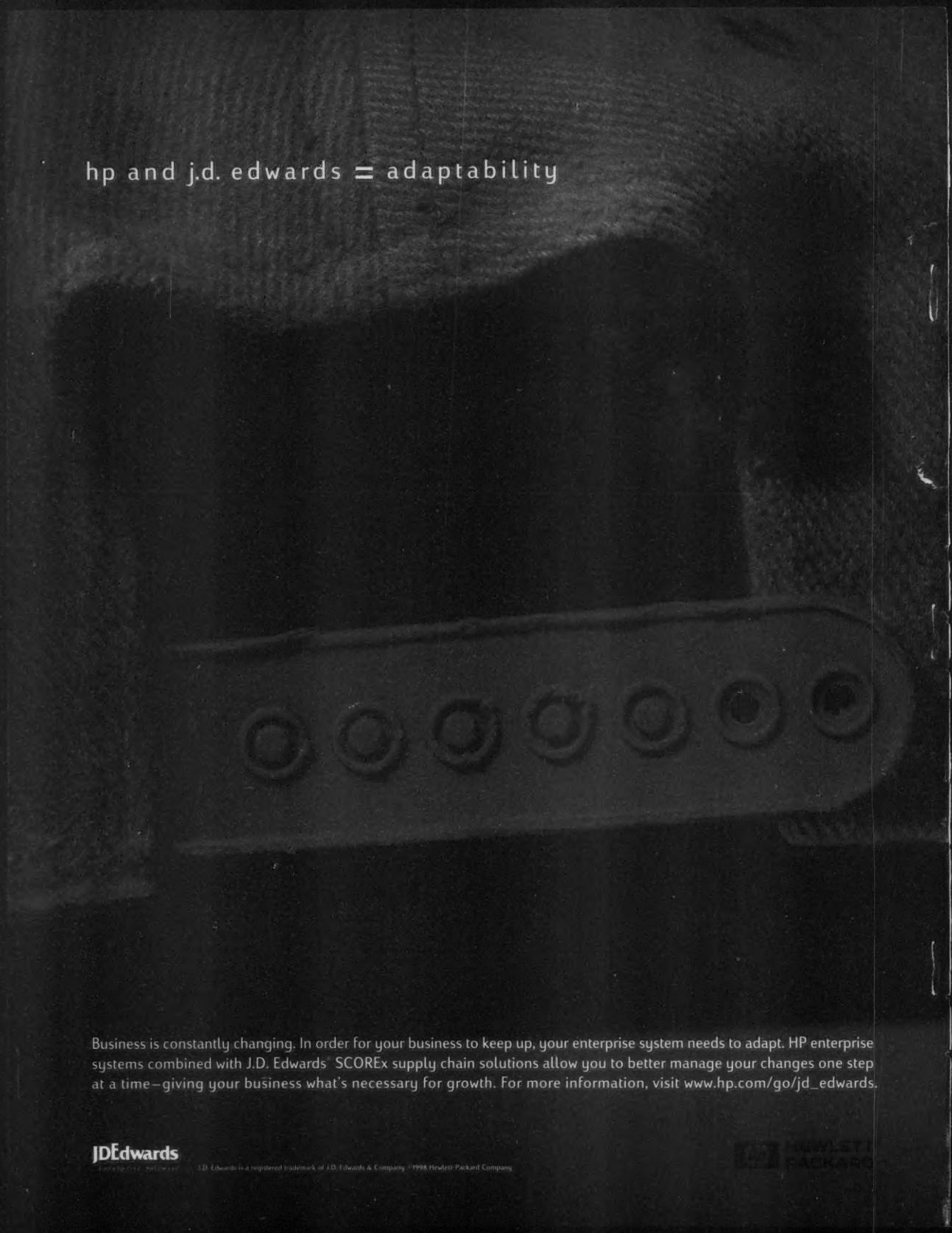
As many as 400 workers could use the costing software eventually, Shay said. But the application likely will be rolled out one business unit at a time, which could take two years, Shay said.

Manufacturers also are interested in using activity-based costing to get an improved picture of their production costs. They, too, have said that preparing employees to work in a new way is the biggest challenge [CW, July 20].

Analytical applications can help companies make better business decisions, said Henry Morris, an analyst at International Data Corp. in Framingham, Mass., a sister company to *Computerworld*. But installing them is a complex process, often requiring a whole new approach to decision-making, he said.

"It's a little simplistic to think that you just pop in some analytics and get instant benefits," Morris said. "Unless people are willing to accept change, the technology won't have much impact." □





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Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

NT/Unix integration

Microsoft Corp. has announced its Windows NT Services for the Unix Add-on Pack, designed to help integrate Windows NT Workstation 4.0, Windows NT Server 4.0 and existing Unix platforms. Intergraph Corp. in Huntsville, Ala., and Mortice Kern Systems Inc. in Waterloo, Ontario, teamed with Microsoft to develop the Add-on Pack. Its Intergraph network-file-system software lets Windows systems access files on Unix and vice versa. The $149 pack should ship by February.

HP expands middle

Hewlett-Packard Co. in Palo Alto, Calif., has added to its middle server lines the HP NetServer LH4 and LH4R. Designed for large workgroups and data centers, they're available in pedestal and rack-mounted models. Featuring four Pentium II Xeon 400-MHz processors and support for up to 12 hot-swappable Ultra2 SCSI drives and a dual-channel RAID controller, the servers also include a 10/100M bit/sec. Ethernet adapter and hot-swappable fans and power supplies. The HP NetServer can be managed with HP Top Tools, a Web-based Enterprise Management browser interface. Pricing for the HP NetServer LH4 and LH4R starts at $8,100.

Sun updates systems

Sun Microsystems Inc. has upgraded its entry-level Ultra 5 and Ultra 10 workstation models and its Enterprise 450 workgroup server with faster UltraSPARC-IIi and UltraSPARC-II processors, respectively. Also new are faster hard drives and improved graphics subsystems for the Ultra workstations. The Enterprise 450 model will get a 400-MHz processor. Pricing begins at $21,400. The Ultra 5 models will run at 333 MHz, and the Ultra 10 models offer a choice between a 333- and 360-MHz processor. Prices range from $4,295 to $7,995.

RS/6000 readied for ERP apps

▸ *Package to provide near-constant uptime*

By Jaikumar Vijayan

FAST-GROWING applications such as ERP and Web commerce are forcing information technology managers to include safeguards in even relatively mainstream Unix server environments. That will ensure that applications are available almost all the time.

To help them do that, IBM recently announced a new fully preconfigured, "high-availability" RS/6000 server platform for users seeking to deploy enterprise resource planning (ERP) and electronic-business applications on Unix servers.

Hewlett-Packard Co. in Palo Alto, Calif., has a similar offering that integrates high-availability technology as part of a service to deliver 99.9% application availability.

High-availability configurations are intended to give users near-uninterrupted access to vital corporate applications. Until recently, the need for such continuous availability was restricted largely to mainframe and very high-end server environments hosting vital corporate data and applications.

It is often costly to implement because it typically involves investing in mirrored hardware, software and networks. But in environments that require such security, the cost of not building high-availability components may be even higher, said Harvey Hindin, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y.

IBM's high-availability package includes two of its latest S70 Advanced RS/6000 servers tied together using IBM's High Availability Cluster Multi-Processor software. Also included is an RS/6000 SP System Attachment Adapter, which is

RS/6000, page 62

What IBM's RS/6000 high-availability package includes:

- Two preconfigured S70 Advanced servers with up to 32G bytes of memory
- IBM's High Availability Cluster Multi-Processor software
- RS/6000 SP System Attachment Adapter – a hardware switch attachment that connects the S70 and S70 Advanced servers to the SP

Data General sees stronger '99

▸ *Users not worried by '98 downturn*

By Jaikumar Vijayan

AFTER ONE of its best years ever in 1997, Data General Corp. has spent most of this year back in a place it has been for most of this decade: in the red.

But a growing storage business, more focus on high-end servers and cost savings from layoffs this year should translate into a better 1999 for DG, according to analyst reports.

The company managed to eke out a surprise profit of $3.7 million on revenue of $383.7 million for its fourth quarter of 1998. But it closed the books on the year with more than $152 million in losses on total revenue of $1.5 billion.

Most of the problems were caused by a fall-off in revenue from DG's Clariion storage division, which today accounts for 28% of company revenue, said John Gavin, a vice president.

DG has been aggressively moving its storage products from current-generation SCSI technology to Fibre Channel. But it's still waiting for customers such as Hewlett-Packard Co. and Dell Computer Corp. to pick up its Fibre Channel products in volume.

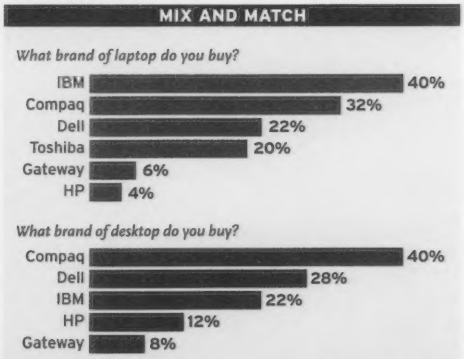
DG also will continue to focus its Intel-based Aviion servers on the high-end market by offering integrated clustering and packaged servers for vertical industries, Gavin said.

Long-term DG users were optimistic. "I am not concerned," said Steve Pounds, controller at Security Forces Inc., a provider of security services in Charlotte, N.C. "They've been in these kinds of situations in the past and have always found a niche market to put it back on track."

Added Tim Boyer, information systems manager at Denman Tire Corp. in Leavittsburg, Ohio, and a DG user since 1979, "They are still around [because they] offer very good price [and] performance." □

Snapshot

MIX AND MATCH



Base: Survey of 50 Fortune 1,000 companies; multiple responses allowed

Source: Forrester Research Inc., Cambridge, Mass.

Linda Sanford reviews her first year as IBM's Global Industries vice president

E-commerce one of IBM's core issues

Linda Sanford's appointment as vice president of IBM's powerful Global Industries in January put her in charge of an organization that was responsible for generating a staggering 70% of IBM's $80 billion in revenue last year.

Sanford's elevation from her previous job as the head of IBM's S/390 mainframe business makes her not only the first woman to hold the job, but also the only person without any formal sales experience to head IBM's blue-suited sales force.

She talked recently with senior editor Jaikumar Vijayan about her first year on the job.

Q&A, page 62

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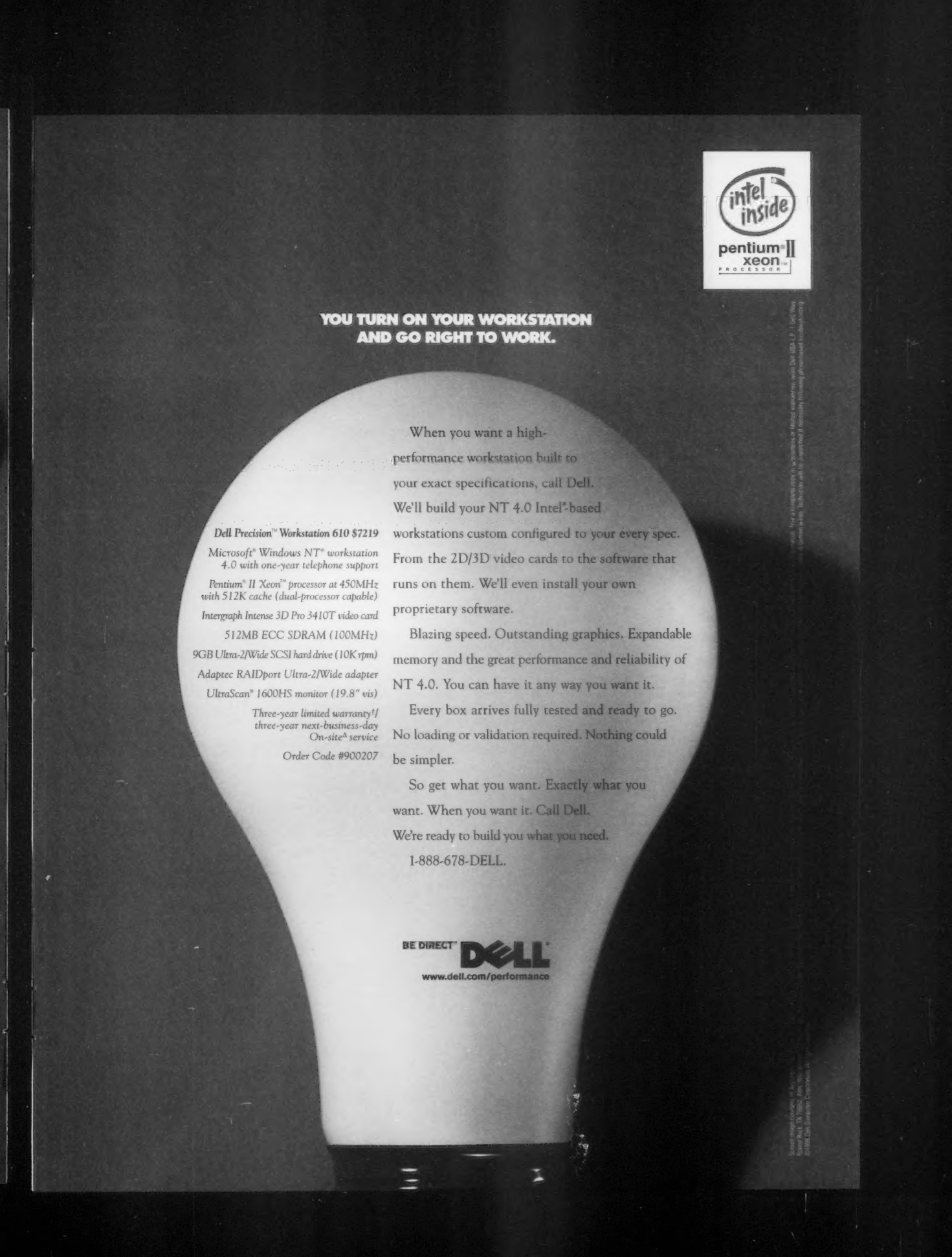
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Q&A with IBM's Sanford

CONTINUED FROM PAGE 59

On what customers describe as their most important concerns:

The three core fundamental business processes that customers worry about most are customer relationship management, supply-chain management and electronic commerce. . . . In the world of the [Internet], you have to rethink the way you are interacting and dialoguing with customers: Who do you want your customers to be, how to attract their business and how to keep them happy.

On how electronic commerce is transforming business:

This whole notion of E-business is very big. Our customers are looking for support and guidance on how to become an E-business. . . . [They are realizing that] you can't take core banking processes — or claims processes or automobile processes — and put a Web front end on it and say, "This is an E-business." It really entails transforming core business competencies.

On what IBM is doing to address this need:

We have a whole set of industry-specific skills based on [business] transformation services and consulting and helping companies lay out a plan [for implementing E-commerce]. . . . It may start with consulting to actually providing the solutions, the hardware, the software . . . all the way to outsourcing.

On how her lack of formal sales experience has helped her bring a new perspective to her job:

I brought to this job some of the development discipline that kind of was ingrained in me from Day 1 . . . where you need to set a target and then drive maniacally to [execute tasks] in a very disciplined fashion.

On the importance of building customer relationships:

One of the things we have reinforced in our minds is how important the customer relationship aspect is [to IBM's business]. . . . More so, perhaps, because there is such rapid change going on in all businesses, whether banking, insurance or manufacturing. . . . [Customers] are looking for partners who understand their industries in their own terms and in their own languages . . . and who understand issues like mergers and privatization. □

RS/6000 readied for ERP

CONTINUED FROM PAGE 59

a hardware switch attachment for connecting the S70 and S70 Advanced servers to massively clustered RS/6000 environments.

IBM's new offering may be just the ticket for International Paper Co., a global producer of printing and writing paper and packaging materials in Purchase, N.Y., said Ben Moore, a Memphis-based manager of Unix and NT services at the company.

International Paper is hosting a massive SAP AG R/3 ERP implementation on a battery of RS/6000 S/70 servers. The company is interested in building high-availability components to guarantee availability of SAP applications, including financial planning, materials management and worldwide production planning.

"We have a choice to either buy the cluster configuration or build the high-availability [environment] ourselves," Moore said. He noted that "IBM's package would allow us to implement high-availability a lot quicker" than it would if the company itself were to build it.

Pricing for a base configuration consisting of two four-processor RS/6000 S70 servers, each with 2G bytes of memory, cluster software and the AIX Unix operating system, starts at about $445,000. □

SHORT

Hitachi expands portable line

Hitachi PC Corp. last week announced that it is expanding its portable computer and desktop PC product families. For example, the company said it is adding the VisionBook Traveler 600 and 800 models for corporate users with mobile computing needs.

The Traveler 600 mininotebook is powered by an Intel Corp. 266-MHz processor, weighs 2.9 pounds and will be available in January at a cost of $1,999 to $2,199. The VisionBook 800 model runs on either a Pentium II 266- or 300-MHz processor and weighs 8.5 pounds. Pricing starts at $3,199. It also will be available in January.

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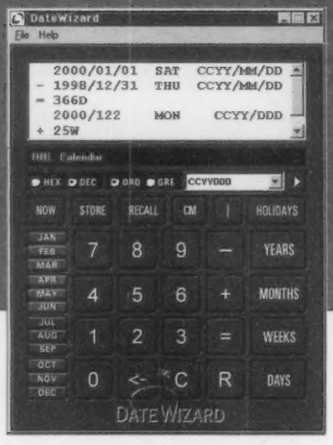

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NEW PRODUCTS

GATEWAY has announced the ALR 8300, a departmental server incorporating the 450-MHz Pentium II Xeon processor from Intel Corp.

The North Sioux City, S.D., company said the server can support one or two Xeon processors as well as the Intel 440GX chip set featuring the 100-MHz front-side bus and PC100 synchronous dynamic RAM. It also has dual-channel Ultra2 SCSI capabilities allowing data transfer rates of up to 80M byte/sec. It has 7 expansion slots and 13 storage bays.

A system with a 4G-byte hard drive and 128M bytes of SDRAM costs $5,199.

Gateway
(605) 232-2000
www.gateway.com

SOYO INC. has announced the PW-9800, a Windows 95/98 mininotebook PC.

According to the Fremont, Calif., company, the notebook comes with a Cyrix Corp. 180-MHz processor, 32M bytes of RAM, a 2.1G-byte hard drive, an external 24-speed CD-ROM and an 8-in. display. It measures 7 by 9.4 by 1.6 in., weighs 3.5 pounds (including battery), supports memory expansion to 128M bytes and includes a peripheral component interconnect graphics accelerator.

The mininotebook costs $995.

Soyo
(510) 226-7696
www.soyousa.com

HEWLETT-PACKARD CO. has announced the LaserJet 4500 and the LaserJet 8500, color laser printers for workgroups and departments.

The LaserJet 4500, replacing HP's LaserJet 5 family, can print 4 color pages per minute. The LaserJet 8500 can print 6 color pages per minute, can handle media up to 11 by 17 in. and includes a driver for computer-aided design.

Pricing for the 4500 starts at $2,499. Pricing for the 8500 starts at $5,999.

Hewlett-Packard
(650) 857-1501
www.hp.com

MYLEX CORP. has announced AcceleRAID 150, a single-channel RAID adapter for desktops and entry-level servers.

According to the Fremont, Calif., company, the adapter offers automatic detection of failed drives, automatic rebuilding of failed drives, online RAID-capacity expansion, hot-drive swapping and parity cache memory. It supports all RAID levels and includes a 33-MHz onboard processor from Intel Corp.

The adapter costs $399.

Mylex
(510) 796-6100
www.mylex.com

EVERGREEN TECHNOLOGIES INC. has announced PCI Upgrade Platform, a peripheral component interconnect (PCI) card that upgrades the processor, memory and bus of an older PC.

The Corvallis, Ore., company said the card plugs into a PCI slot and supports Pentium II Celeron processors from Intel Corp., K6-2 processors from Advanced Micro Devices Inc. or other Socket-7-compatible processors with bus speeds up to 100 MHz. It can house up to 256M bytes of synchronous dynamic RAM.

Pricing ranges from $149 to $999.

Evergreen Technologies
(541) 757-0934
www.evertech.com

WYSE TECHNOLOGY INC. has announced the Winterm 5000 network terminal, a browser-based desktop terminal that accesses applications on a server.

According to the San Jose, Calif., company, the thin-client terminal can display any application, character-based or graphical, running on an intranet, Unix, mainframe or Windows NT server on a network. It was designed as a plug-and-play replacement for ASCII and Ethernet-based IBM terminals and includes a Post Office Protocol E-mail client.

Pricing starts at $650.

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Data Warehousing

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Briefs

Support for PeopleSoft

Information Builders Inc. in New York is shipping SnapPack Power Reporter Version 2.5 for PeopleSoft. The latest generation of the SnapPack product line provides Web-enabled enterprise decision support for PeopleSoft Inc. customers and helps them deploy applications faster, increase productivity, expand user self-sufficiency and improve performance, the company said. It also integrates enforcement of PeopleSoft's Query Security Tree and Row Level Security and provides support for the Effective Dating and Hierarchical Models. Pricing was unavailable.

Siebel, Sagent team up

Siebel Systems Inc. in San Mateo, Calif., will use Sagent Technology Inc.'s data migration capabilities and analytical functionality in Siebel's enterprise relationship management applications. Siebel named Sagent as the preferred vendor for data migration from Siebel's Series 3 and Series 5 applications to upcoming releases of Siebel's sales, marketing and customer service products.

Compaq's data mart

Compaq Computer Corp. will sell Web-based data marts for OpenVMS (for VAX and Alpha systems) and for Windows NT (for Intel and Alpha systems) based on Information Builders' SmartMart and WebFocus products. The Compaq offering is called the Web Data Mart Suite. Pricing and availability weren't released.

Statistical analysis

Sagent Technology in Palo Alto, Calif., has announced Sagent Statistical Calculator and StatView for Sagent — two analysis tools that enable advanced, server-based computation, end-user graphical analysis and presentation of data. Sagent Statistical Calculator costs $10,000 per server; StatView for Sagent costs $5,000 for five client licenses.

Utilities set out to win customers

▸ *Warehouse projects face old data, other snags*

By Thomas Hoffman

AS DEREGULATION of the electric and gas industries in the U.S. provides consumers with more companies to choose from, a growing number of utilities are firing up data warehousing projects to help them find ways to attract and retain customers.

But information technology managers at the utilities are running into many of the same data mining problems as their predecessors in the already-deregulated telecommunications industry, as well as data warehousing veterans in retail and banking. Such problems include the need to scrub and reformat old mainframe data.

Perhaps more vexing for utilities is having to learn the ins and outs of marketing and customer service — "two areas they traditionally haven't done much with, since they never had to compete," said Aaron Zornes, an analyst at Meta Group Inc. in Burlingame, Calif.

Trying to persuade residential power customers to switch to a utility with an unfamiliar track record will be a tough sell if the cost savings represent only a few dollars per month, Zornes added.

"Deregulation busters," or aggressive power marketers, "are becoming a little more conservative," having recognized that "not all customers are going to switch," said Stephen Horne, vice president of database consulting services at Dun & Bradstreet Information Warehouse Solutions (D&B) in Parsippany, N.J. The company sells telemarketing information to more than half of the top 100 power companies in the U.S.

One of those companies, Exelon, learned an early lesson from phone companies: Don't overcontact customers. "Customers are telling us, 'Oh, no! I'm not going to be getting calls at dinner again!' " said Gary Mottola, database manager at Exelon, an unregulated marketing entity of Peco Energy in Philadelphia.

Exelon, a D&B client, keeps a record of each time it contacts a prospective customer, so it can be careful about not overdoing it, Mottola said.

In places such as Kansas City, Mo., and most of the U.S. heartland, the move toward deregulation is occurring more slowly

Utilities, page 68

From left, KeySpan's Frank Mott, Gloria Castro and Madalyn Hanley are using a data warehouse to expand the company's gas service to Long Island

ANDRE SOUROUJON

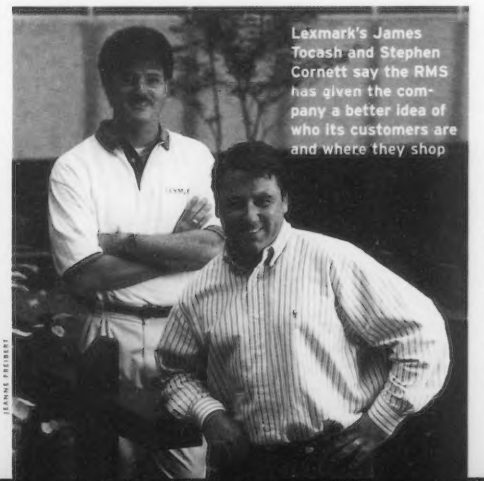
Printer manufacturer tracks your inventory

By Steve Alexander

MOST COMPANIES try to improve profits by managing their own inventories. But printer manufacturer Lexmark International Inc. in Lexington, Ky., is generating additional revenue by helping customers manage their inventories.

Through Lexmark's data warehouse and an inventory management application called the Retail Management System (RMS), Lexmark offers to help dozens of large retailers manage their inventories of Lexmark printers. It's using an approach called vendor-managed inventory, which for the past two years has been used by the retail packaged goods industry to track inventory.

Printer, page 68



Lexmark's James Tocash and Stephen Cornett say the RMS has given the company a better idea of who its customers are and where they shop

JEANNE FREEMAN

COMMENTARY

Data replication and the Internet: What to know

SHAKU ATRE

THE INTERNET has emerged as a low-cost, do-it-yourself data-replication strategy. The timing, however, is ironic because that emergence is occurring at the same time organizations are rolling out database-aided data replication.

It isn't surprising that an increasing number of organizations are experimenting with replication for the first time. Microsoft Corp. is touting the new, flexible replication in SQL Server 7.0. IBM provides similar features with its various tools for DB2-only and heterogeneous environments. Sybase Inc., too, offers bidirectional replication between mobile Adaptive Server Anywhere clients and the Sybase Adaptive Server. Making data replication even easier, most vendors have wizards that help automate the process.

Data replication, page 68

Printer

CONTINUED FROM PAGE 67

The benefit to managing the supply chain in that way is that inventory gets replenished before it's depleted. When retail stores manage the inventory, they often don't order inventory until after it runs out because they're too busy to act in advance, said Tim Harmon, an analyst at Meta Group Inc. in Burlingame, Calif.

"Retail generally is a good user of data warehousing because so much of what they do is marketing-intensive," said Mitch Kramer, an analyst at Patricia Seybold Group in Boston.

The RMS service is limited to retailers who order products via electronic data interchange (EDI), providing Lexmark with detailed ordering and inventory information. The RMS includes 12 large retail customers representing more than 3,500 retail stores.

"We're using the RMS to proactively sell into stores that are low in supply," said Stephen Cornett, a systems analyst at Lexmark's data warehouse group. "We also know which stores are very good for us and which we don't want to be out of our products."

"With the RMS, we've been able to take advantage of the opportunity to gain sales that we otherwise would have missed," said James Tocash, U.S. retail account manager at Lexmark's consumer printer division.

For example, Tocash said that in one week, the firm was able to generate incremental sales of more than $250,000 at one large retailer. Such incremental sales vary widely among customers, but typically represent sales gains ranging from 5% to more than 12%, he said.

TARGET BEST LOCATIONS

In addition to boosting sales, the RMS has given Lexmark a better idea of who its customers are and where they shop.

"We now have the ability to take any product and any period of time in the last year and a half, then find where are the best locations for those products to sell," Tocash said.

Lexmark's data warehouse uses MicroStrategy's DSS Web and Agent software with a DB2 relational database management system. The data warehouse replaces a system in which inventory figures were compiled partly by EDI and partly by paperwork. Using the data warehouse, sales and inventory information that previously took four or five days to turn around now can be compiled in half a day, Tocash said.

The RMS project began in January, when it was used to provide customer inventory information to about 35 field sales people, Cornett said. It later was expanded to provide management reports to about 75 top executives and line managers at headquarters.

The company has used the RMS only in the U.S. but plans to roll it out in Europe this month, Cornett said. But it hasn't been as smooth as the original U.S. rollout, he added.

"Although a U.S. pilot project was developed and delivered, the challenges of rolling it out worldwide have been significant," Cornett said. "Since Lexmark is a global company, a better pilot project might have been to start with retailer data, for example, from the three largest retailers in each Lexmark geography. Including data from all geographies in the beginning would have resolved many issues we now face." □

Alexander is a freelance writer in Edina, Minn.

Utilities

CONTINUED FROM PAGE 67

than in Pennsylvania and California, where electric rates run as high as 10 cents per kilowatt hour, compared with 7 to 8 cents per hour in the Midwest.

But that hasn't stopped Kansas City Power & Light (KCP&L) from being forward-thinking about new market opportunities. The company has nearly completed a two-year effort to install a wireless meter-reading system from San Carlos, Calif.-based Cellnet Data Systems Inc. The system will give the utility daily usage information about 395,000 residential customers "that our competitors won't have," said George Mentrup, manager of market assessment at KCP&L.

That kind of information could become critical when the Missouri and Kansas markets KCP&L serves are deregulated in the next few years, Mentrup said. That's when time-of-day usage price rates "might become important."

LEARNING AS THEY GO

The plan, Mentrup said, is to share the wireless information housed in an Oracle Corp. database with the SAS Institute Inc. data warehouse KCP&L began to build in 1996. The SAS project started on such a small scale because of the utility's limited experience "that we called it a data shed," Mentrup said.

Other utilities also are learning as they go. KeySpan Energy, created by the merger of Brooklyn Union Gas and Long Island Lighting Co. (LILCO), uses a marketing data warehouse it began to build last November to help it "get to know our customers," said Madalyn Hanley, a project manager at the Brooklyn, N.Y.-based firm.

The system — comprising Cognos Inc. and SAS front-end tools tapping a Sybase Inc. IQ database — already has begun to pay dividends. Following its recent merger with LILCO, where only 28% of residential customers use natural gas, KeySpan wanted to leverage LILCO customer information to help it expand its gas services onto New York's Long Island.

The use of the data warehouse – along with other factors such as fewer gas customers on Long Island – helped KeySpan nail an 18% response rate to a direct-mail campaign it targeted at Long Island business and property owners last spring, according to KeySpan's Frank Mott.

Because 80% of residential consumers in its traditional territories of New York boroughs Brooklyn, Queens and Staten Island were already using gas, Brooklyn Union typically had 3% to 4% response rates to its direct-mail campaigns for gas service.

GETTING A REACTION

The use of the data warehouse — along with other factors such as fewer gas customers on Long Island — helped KeySpan nail an 18% response rate to a direct-mail campaign it targeted at Long Island business and property owners last spring, said Frank Mott, director of market intelligence at KeySpan.

Even experienced data warehousing veterans say they continue to run into technical and cultural roadblocks.

For example, Enbridge Consumers Gas, the biggest gas distribution company in Canada, with more than 1 million customers, is using a $215,000 SAS system it developed to help it forecast energy sales at a micro level, said Fahim Rahman, an analyst in the economic studies department at the Toronto-based firm.

Although the company has used the system since 1995, it took months to convince users in marketing and other departments to share their customer data, Rahman said.

To do that, Rahman and others in his department had to demonstrate to the marketing department how it could reuse customer information to pitch a new product and how his group could do analyses for them. "It was a real sales job," Rahman said. His U.S. peers are just starting to discover that. □

Data replication and the Net

CONTINUED FROM PAGE 67

The primary driver behind any data replication strategy is usually the same: multiple people in separate locations needing access to the same data.

Sounds simple, right? Well, it isn't. The fundamental problem is this: As soon as you have the same data in more than one place, the problem arises of how you know it is in fact, the same. If data changes in one place, it needs to change in all places to stay consistent.

That problem is tough enough in a simple replication scenario, where you have a single, central copy that needs to be replicated to multiple clients. But usually it turns out that users also need to make changes to the data. Short of a complex, database-specific means of ensuring that changes made at those sites actually originate at the central site and then flow out from there, managing that two-way replication is enormously more complex than the already difficult, one-way scenario.

The chief drawbacks to a centralized data approach have traditionally been data access, retrieval speeds and the investment in the network infrastructure that supports such data access.

NOT ALL THAT IT SEEMS

The infrastructure issue is what's boosting the Internet as a network surrogate for data access. The virtually maintenance-free and cost-free aspect of Internet computing is making a return to centralized data possible. But, in fact, that "free" infrastructure doesn't come without a cost.

The Internet communications model doesn't support the conversation-like mode of communications common in traditional networking, where there's acknowledgment when data is received. Instead, in Internet computing a message is sent to a destination and is assumed to have arrived safely at some (usually unknown) time. There's no notion of sending, waiting, receiving and acknowledging during the communication.

Not knowing whether data has been received — nor how much time elapsed between its being sent and its being received — makes for a dicey data-replication infrastructure.

You have two choices to solve that problem: Bring the data to the users (standard data replication) or bring the users to the data (access to centralized databases). Which should you choose? Consider the following questions:

- What is the nature of the system or application? Applications that require very fast response time or online data integrity may not yet be candidates for Internet-based access. Data-query-oriented applications and those that support only low-to-moderate levels of transactions are better suited for such an approach.
- What kind of communications infrastructure do you have? If you have invested in a wide-area network, why rock the boat? Stick with what you have. If you don't have that infrastructure in place or want to reduce your maintenance and support costs, consider using the Internet instead of your own private network. □

Atre is president of Atre Associates Inc., a consulting firm in New York that specializes in data warehouse and database technologies. Her E-mail address is shaku@atre.com, and her DataWareMart methodology can be found at www.atre.com.

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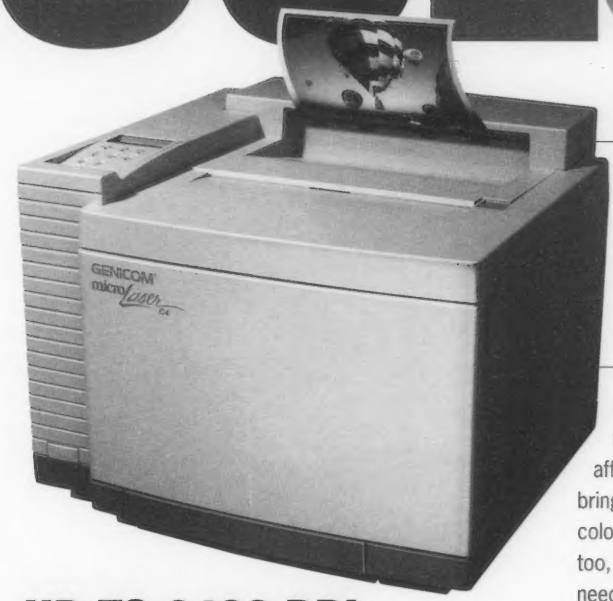

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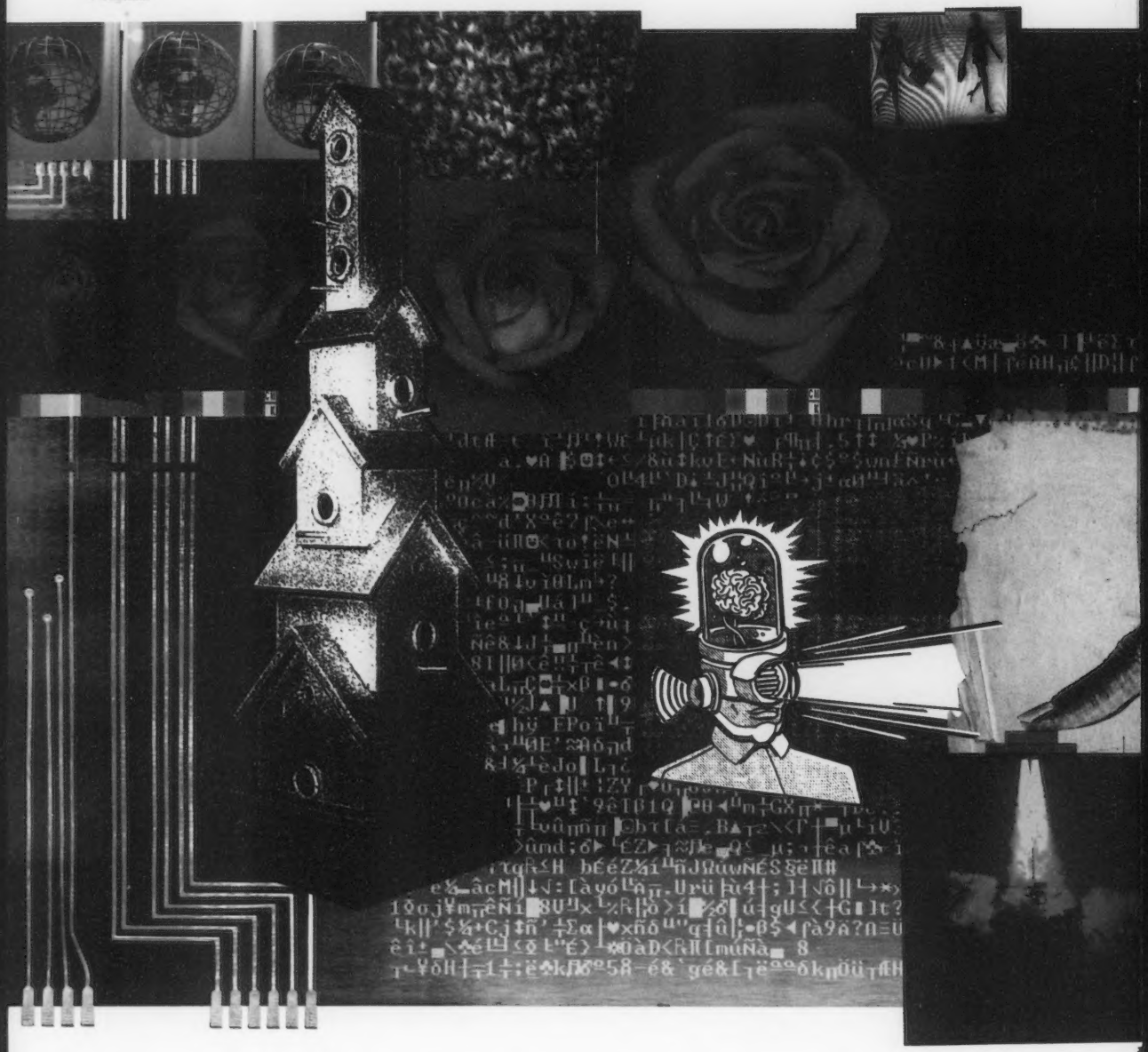

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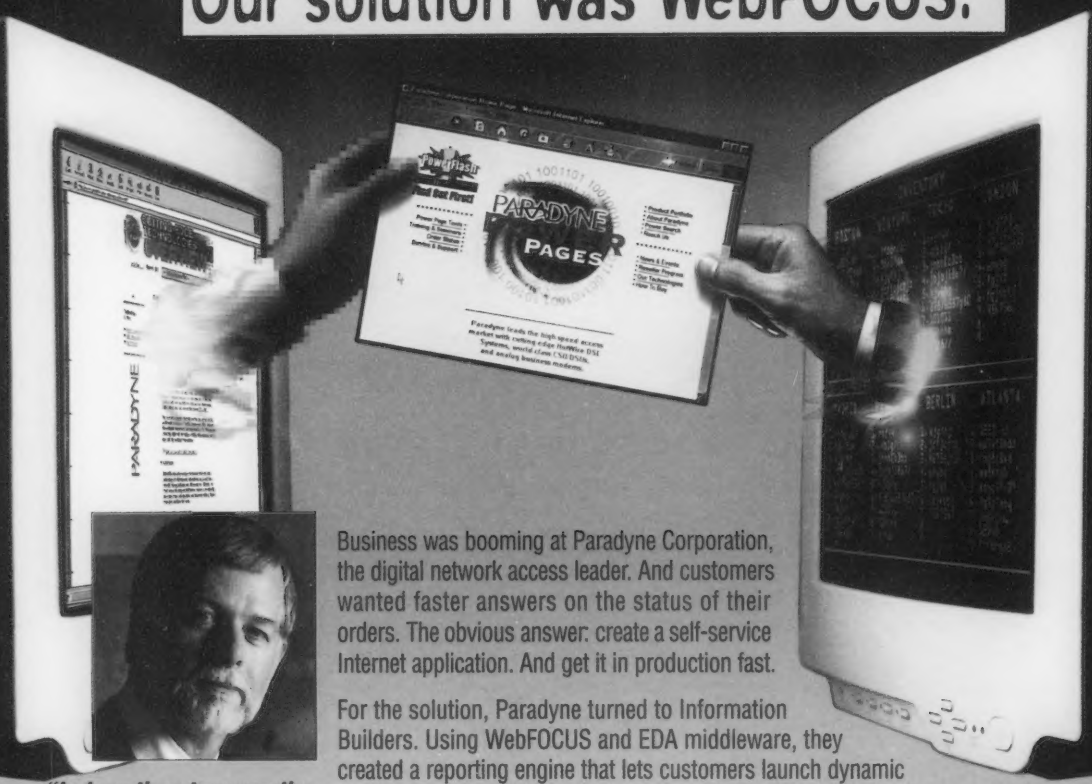

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Windows Pains

Devin Asher

IT MANAGERS BLAME SUPPORT HEADACHES ON TOO MANY WINDOWS VERSIONS AND UPGRADES

BY BRIAN D. JAFFE

HOW MANY versions of an operating system can you support before your staff reaches the breaking point?

Perhaps with Microsoft Corp.'s Windows you'll find out. There's Windows 3.11, Windows 9x, Windows NT, Windows CE and, soon, a version for smart cards. Add the different releases (Windows 95 and 98, NT 3.51 and NT 4.0 — and the looming Windows 2000, formerly NT 5.0) and all those service packs with fixes and enhancements, and the number grows almost exponentially.

As an information technology manager, I know that new technology arrives a heck of a lot faster than older technology departs, making people feel as if they're in a constant state of migration and upgrade. That puts a burden on IT staffs to support everything from state-of-the-art to legacy systems (a term some now apply to Windows 3.11).

Dwight Gibbs, chief techie geek (that's his real title) at The Motley Fool in Alexandria, Va., says supporting all the different versions of Windows is a "management headache" because each version

Windows Pains, page 74

Jaffe is an IT manager in New York who frequently writes about the integration and management of information technology in the workplace environment. His Internet address is bdjaffe@compuserve.com.

Windows Pains

CONTINUED FROM PAGE 73

"has its own quirks and service packs." On top of that, it's "impossible to find someone who knows every flavor really, really well," he says. David Buckley, an IT manager at Nicholas-Applegate Capital Management in San Diego, adds that there are different skill levels for each version. For example, he says, NT requires greater knowledge of networking technologies such as TCP/IP.

Increasingly, desktop technicians are challenged to keep track of each version's capabilities and idiosyncrasies. Jeff Johnson, network administrator at Triple S Plastics Inc. in Vicksburg, Mich., says it can be difficult to "shift gears between the older and the newer."

Another problem is that IT support employees have different levels of familiarity with the technologies they handle. Buckley says his front-line staffers were "brought up with 3.11 and have been trained in newer versions." For Ralph Labarta, an IT manager at Hydro Agri North America in Tampa, Fla., it was the opposite. He says his staffers "only have two or three years' experience, [and] they're finding that when they have to provide support on 3.11, they don't have the knowledge base."

Victor Raisys, Microsoft's lead product manager for Windows, acknowledges the staffing problems IT managers are facing. "Good technical help *is* hard to find," he says.

The most-cited source of all this frustration is the furious pace at which Microsoft releases new Windows versions and service packs. Gibbs says "Microsoft has us on an upgrade treadmill, " meaning as soon as you finish deploying one update, it's time to start the next.

On top of that, each successive version of Windows requires significantly more processing power, memory and disk space. With many companies stretching PC life cycles beyond the traditional three-year depreciation schedule to four and sometimes five years, deploying a new operating system to the entire company may require significant capital expenditure.

Then there's Windows CE, which seems to be a stealth operating system on corporate IT's radar. Almost all the IT managers I spoke with indicated they have users with personal digital assistants running CE, but they also acknowledged that they don't support it. This seemed to be a manifestation of an "enough already" mentality and a refusal to deal with yet another platform — especially when end users acquire it by skirting corporate IT channels.

COPING

To deal with the headaches of numerous versions of Windows, IT managers rely on disciplines that served them well in the past.

■ **It's the business, stupid.** Sometimes we need to remember that the business, not the technology, is the primary concern. IT managers "have to be responsible [and not] spend money chasing technology that the company doesn't need," says Dick Lefebvre, IT director at Simpson Industries Inc., a manufacturer in Plymouth, Mich. "That's how IT builds a successful partnership with the company."

Lefebvre resisted upgrading his 450 users from Windows 3.11 to Windows 95 until earlier this year. To justify the upgrade, he cited year 2000 concerns, productivity and compatibility with 32-bit software offerings. He chose 95 over NT because of cost concerns and the perception that 95 was "stabilized and running well," he says.

■ **Be picky.** With service packs and patches, many IT managers are quite selective about the upgrades they distribute. "I don't have time to keep every desktop current," Johnson says, claiming that "most of the changes are minimal — a lot of the things they fix, most everyday users don't even notice." Johnson says he will distribute a service pack to every desktop only if it fixes a problem his users are having.

"It would be foolish to go with every upgrade unless it adds substantial value and contributes to the bottom line," Lefebvre says.

■ **Staff motivation.** With newer technologies in the headlines, it's tough to find, retain and motivate employees to work with older technologies. But I've found that if you define and articulate your plans and strategies, users may accept dealing with the old as a way of being involved with the future. And those with the most knowledge of existing technologies are more likely to hold major responsibilities in projects that help the company move forward.

Appealing to techies' career advancement interests instead of their technical interests may placate a staffer who's thinking of looking elsewhere for a more leading-edge environment.

■ **Planning and management.** Touching every workstation is an ugly process. You want to make the most of it and do it as effectively as possible. One option: Blitz the entire workplace quickly, vs. a more evolutionary approach of upgrading as time permits or only when a user gets a new workstation. And how much change do you want? You can change just the operating system, or you can also change the application suite and E-mail system.

IT managers need to balance needs and benefits against the availability of resources (time, staff and equipment), users' tolerance for change and the impact on the environment. Beyond that, they should ensure that a project involves minimal user disruption (many shops do the work after hours or when users are out of the office), no loss of data (including everything from documents to E-mail address books) and frequent communication with users (they hate surprises).

■ **Experience plus training.** With technology as significant as operating systems, helping users and support staff develop the proper skills is critical, and nothing builds skills like hands-on experience. Andy Hafer, vice president of information systems at Hydro Agri, says his support staffers "are guinea pigs going forward with a new version." A technician who was expert at mastering the most obscure settings of initialization (or "INI") files for configuring Windows 3.11 probably will also be an expert at the NT Registry. But it will take time.

That's where training comes in. Class time for training support staff on new operating system versions is generally three to five days. User training can run from a few hours to two days, depending on whether you change your applications as well as the operating system.

But training is no panacea. It takes work to motivate technicians to learn older technologies. Training options may be limited to reference materials or pairing newbies with veteran staffers. But that approach may not be ideal. I have seen more than one young turk turn up his nose at the sight of the "C:" prompt, which more senior staffers rely on like an old friend.

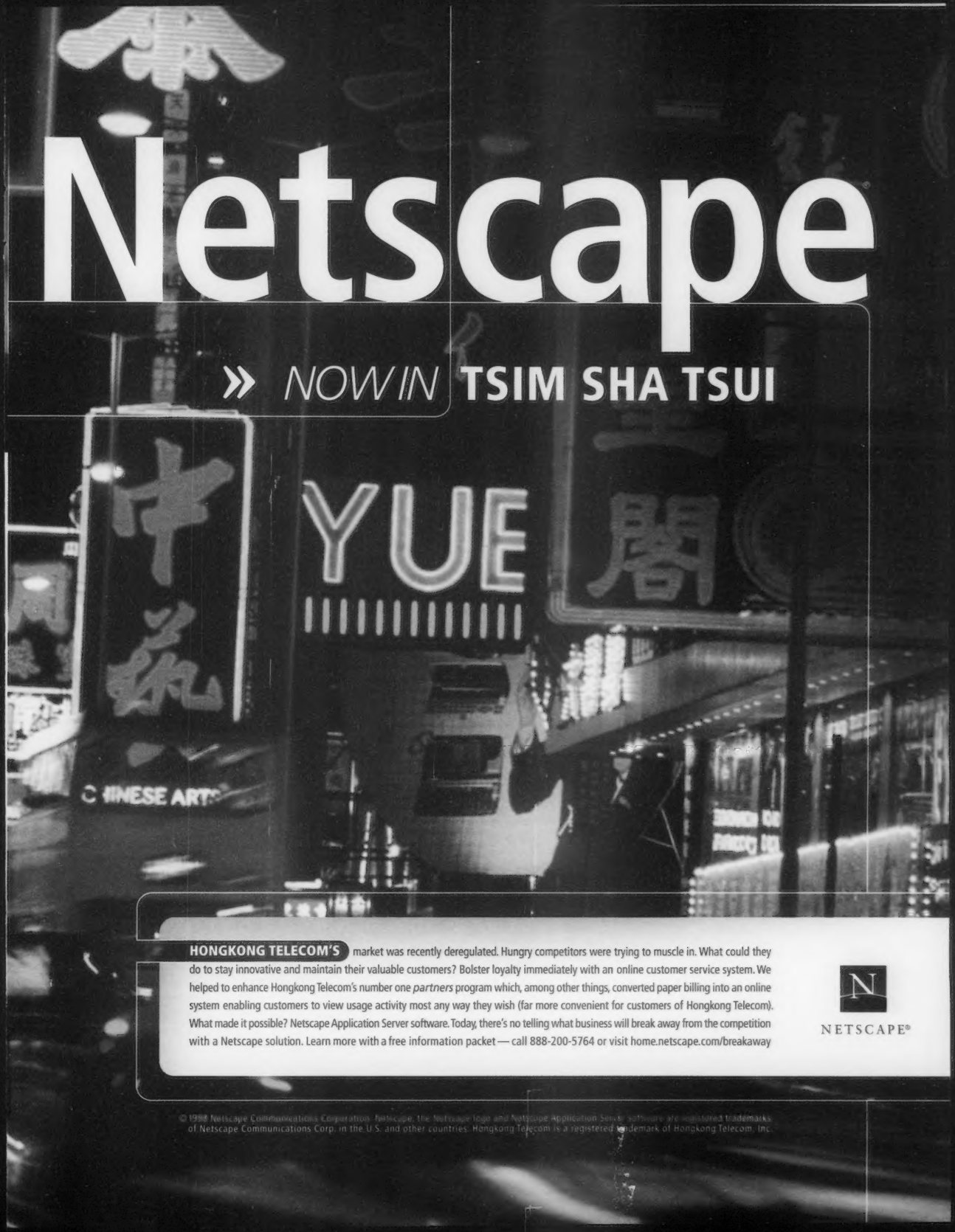
Training the support staff can be simple compared with user training, especially if you're moving from Windows 3.11 or NT 3.51, thus giving users a completely different graphical user interface. Lefebvre found a provider who excelled at software "difference training," designed to teach users about changes and new features. That's a common approach, and one I have used. The idea is to give users enough training so that when they receive the upgrade they will be at least as functional as they were before. In-depth training on specific enhancements can come later.

I doubt the pace of upgrades is likely to change much over the next few years. Raisys agrees that there's room to improve the delivery of service packs to be "on a more consistent schedule." And he points out that Microsoft has "rigorous" testing and beta cycles "to make sure the customer gets the best experience" with the company's products.

But no matter how many fixes or enhancements they have, the biggest success factor will be the technical staff. As Labarta says, "You've got to have people on your staff that can overcome vendor and software shortcomings." □

MANAGING YOUR STAFF TO MANAGE THE TECHNOLOGY

- Encourage employees to find tools to make their jobs easier. But remember: Implementing and using tools effectively is a job in itself.
- Staffers should look at their environment on the enterprise level and not merely as a collection of PCs.
- Give your staff a voice in choosing which upgrades are deployed and how and when they are deployed.
- Ask your employees to define the benefits and justify the resources any deployment will require.
- Hire people who are neither resistant to change nor eager to upgrade simply for the sake of upgrading.
- Make sure your staff has resources available (for example, time and equipment for appropriate testing and vendor support).
- Be it an x.0 version or a service pack, never deploy new software immediately upon release. Wait until you have tested it and read reviews to assess its impact.
- Make sure your employees are aware that their job is to manage technology as well as deploy and support it.



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Ms. MIS
WOMEN IN INFORMATION SYSTEMS

Mothers of Invention

The original six computer programmers receive their due – five decades late

KATHLEEN MELYMUKA

We've all heard about ENIAC, the world's first computer, built by a hotshot team of engineers in 1945. We've seen the black-and-white newsreels of the crew-cut fathers of the computing revolution in their white shirts and pocket protectors standing proudly in front of their huge, blinking baby.

But how many knew that the revolution had mothers? That the hulking machine couldn't do a thing until it was programmed by a half-dozen women? I had never seen their pictures. In fact, I discovered their existence only last month, thanks to Women in Technology International (*www.witi.org*), which brought the four surviving programmers together for an unforgettable presentation at its Business of Technology Conference in Boston.

I wanted to hear how these women's stories had come to be buried for so long and how their struggle for recognition could be brought to bear on the continuing trials of women in technology today. But their story was different — and better.

The women were part of a pool of about 80 female mathematicians who, with most men tied up in the war effort, had been hired by the U.S. Army to manually compute ballistics trajectories at the Moore School of the University of Pennsylvania.

Meanwhile, the top-secret ENIAC was being completed just upstairs, and it seemed reasonable to hire mathematicians from the ballistics pool to make it work: Kathleen McNulty Mauchly Antonelli, Jean Jennings Bartik, Betty Snyder Holberton, Marlyn Wescoff Meltzer, Frances Bilas Spence and Ruth Lichterman Teitelbaum.

Because no one had ever programmed a computer, the women had to wing it. Programming for them didn't mean writing; it meant physically routing data and electronic pulses through the 80-foot-long behemoth using 3,000 switches, 18,000 vacuum tubes and dozens of cables.

"There were no manuals," Antonelli recalls. "They gave us all the blueprints, and we could ask the engineers anything. We had to learn how the machine was built, what each tube did. We had to study how the machine worked and figure out how to do a job on it. So we went right ahead and taught ourselves how to program."

It was challenging, difficult, exhilarating work. "When your mind is racing, it's a lot of fun," Bartik says.

True, the engineers got all the glory, but in the days before Microsoft, when people thought about computers, they thought about hardware. The huge, blinking machine was the news. The rest was details.

But there was money in the details. By the time ENIAC was moved to the Army's Aberdeen Proving Grounds in Maryland in December 1946, the women were earning more than many college teachers. "It was a good job — if you wanted to live in Aberdeen, a tiny town with nothing but Army," Antonelli says. "But nobody wanted to live there."

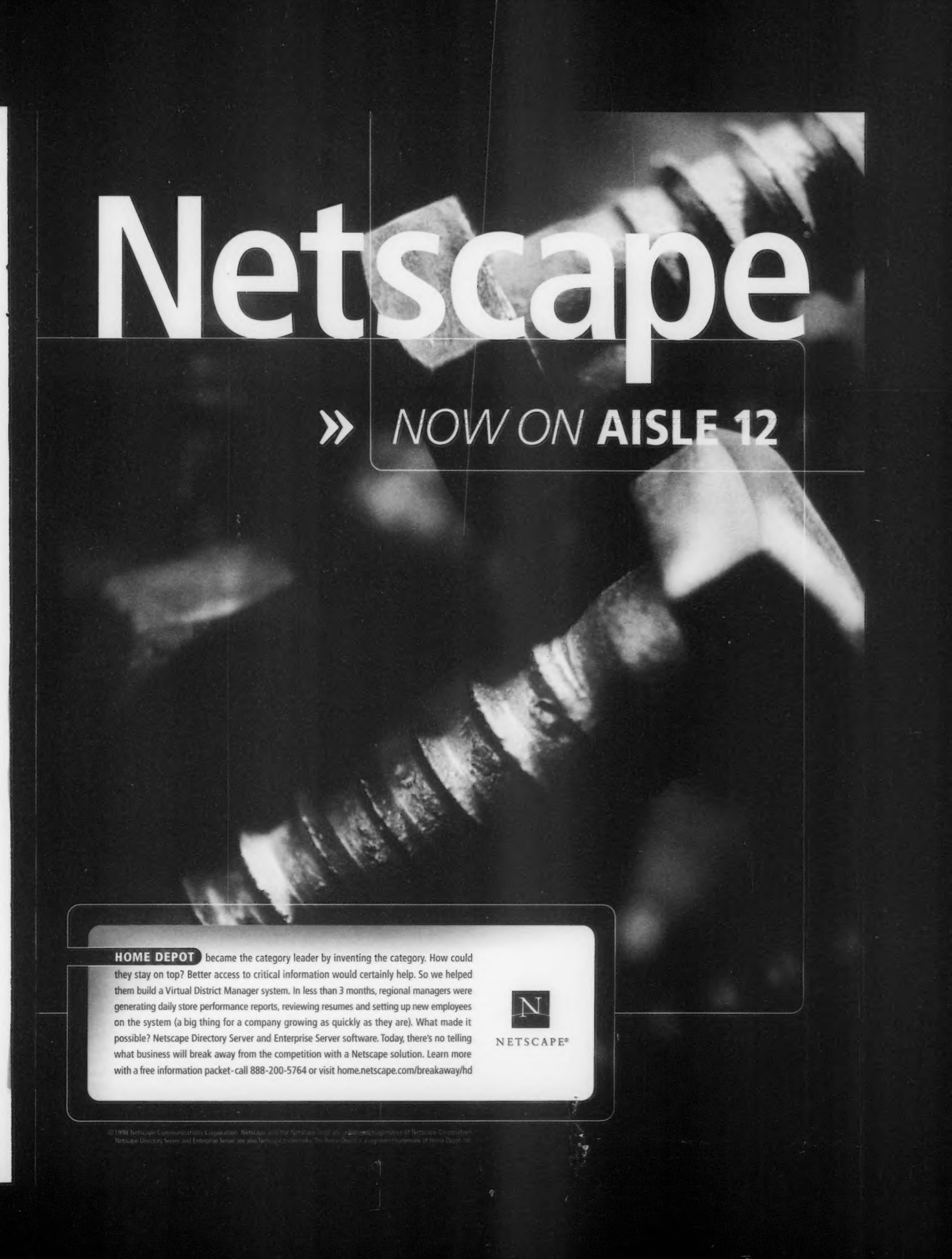
The ENIAC team began to break up, partly because the women wanted more out of life than programming on an Army base. Holberton and Bartik went to New York with ENIAC engineers John Mauchly and J. Presper Eckart to start their own commercial computer company, which evolved into Univac. "We were the only people who knew how to do this," says Bartik, who designed the logic for UNIVAC I, while Holberton served on the Cobol committee and wrote standards for Fortran. "People used to try to hire me, and they would even offer my husband a job."

Teitelbaum, Antonelli and Spence stayed on for a while in Aberdeen, where they taught other women programming, which looked as if it was going to be a woman's job. But with the postwar rush to start families, the programming landscape gradually changed as women opted to stay home. Holberton was the exception. She worked on computer standards committees until retiring in 1983. The rest married and left work to care for their families. But Bartik returned to the workforce after raising her kids and worked with PDP-8 minicomputers. Antonelli married Mauchly, and while raising seven children, served as a true "in-house" consultant to Univac. "John would bring home every idea he had and try it out on me," she recalls. "Today, they'd probably pay me for it."

As the women recounted their adventures, I couldn't detect a bitter note. Not that they didn't stand up for their right to recognition: When a 1975 ENIAC commemoration left out the programmers, Bartik called and gave the organizers a piece of her mind. But for the most part, their pride and happy memories seem to be reward enough. And they bring a wonderful perspective. "There's a high in the computer biz," Bartik says, "but there's no high like the hugs of kids."

History, as usual, is more complex — and more interesting — than it appears on the surface. Bitterness, disappointment, envy and blame are easy responses to life's ironies. The life-affirming ENIAC women bring so much more. They know their worth, and they leave a legacy of ability, guts and grace. □

Melymuka, Computerworld's senior editor, management, spent five years as a writer for the national council charged with advising the president on implementation of Title IX, the law mandating educational equity for women and girls.



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YEAR 2000 AND THE CORPORATE CITIZEN

ED YOURDON

Most organizations are investigating the year 2000 compliance of their vendors, customers and business partners. Unfortunately, one key business partner is often overlooked: the community in which the organization operates.

Consider, for example, IBM and Poughkeepsie, N.Y., or Microsoft and Redmond, Wash. In both examples, one corporation is the largest employer in town; if year 2000 problems close the schools or cause electrical outages, thousands of employees will stay home to care for their children rather than go to the office. If the fire department or police department suffers disruptions, so will the corporation.

Unfortunately, most communities are blissfully unaware of the year 2000 problem. A recent survey indicated that mayors of 55% of the towns and cities across the U.S. believe that Y2K won't affect them; ipso facto, they're not doing anything about it. Even if they're aware of the problem, they usually depend on a penny-pinching state legislature to provide funding for year 2000 remediation.

VESTED INTERESTS

Remember: A community is more than its government. It's also a collection of ordinary citizens, all of whom could have an enormously negative impact on your organization if their lights go out, their phones stop working or their banks are unable to conduct business. If you doubt that disruptions of that kind could affect the operations of a large, efficient corporation, look on the Internet to see how a recent gas explosion in Melbourne, Australia, affected the operations of Toyota and Honda (*www.abc.net.au/news/ 98/09/28/980928_60.htm*).

What should an organization do? The first step is obvious: The Y2K project manager should track down his or her counterpart within the community, as well as the mayor, the police chief, the head of the local emergency preparedness group and other appropriate officials. If that's you, find out if they're going to be ready for year 2000, where the greatest risks are likely to be and whether your organization can help. Find out what their contingency plans are — if the community experiences a rash of fires, power problems, looting or other disruptions, how will it marshal its resources? At best, you may be able to influence the community's strategy and triage plans to provide better service to your organization; at worst, you'll at least know what you can count on and what you can't.

OUTSIDE THE OFFICE

Members of your organization also have the opportunity to be good citizens within the community by offering advice and guidance to local residents. Sadly, most organizations won't do very much in this area, for their lawyers will warn them of legal risks. If you're running a Y2K project team, you need to think about this: Could the experiences and wisdom within your Y2K team be useful to your community's school, church, PTA group, senior-citizens group or others? If the lawyers put a gag order on corporate-sanctioned assistance, then do it on your own time, on a voluntary basis. Remember: These are actions that are likely to affect the community where you and your family live.

And recognize that if year 2000 is a serious problem, there may not be any neutral ground: You're either part of the solution or part of the problem. I was reminded of this recently by a worried Y2K project manager for one of the hospitals in a poor section of New York. Though he had detailed plans for backup electric generators, food and water, he was still worried. "We may be the only place in the neighborhood that *does* have its lights on," he worries. "What are we going to do if thousands of people in our neighborhood are sitting in the dark, with no food and no water? What if they decide to show up at our front door, asking for food and shelter?"

What worried him most was that his senior management didn't want to discuss such a scenario. If the hospital really *wants* to be a good citizen, it should be offering proactive advice to the neighborhood now, not in December 1999. It would be a good idea, for example, to politely suggest to would-be parents that there are risks associated with trying to deliver a baby at midnight on Jan. 1, 2000. It would be a good idea to schedule elective surgery in November 1999 rather than January 2000.

You may not be running the Y2K project at a hospital, but chances are that your organization has several opportunities to be a good corporate citizen with regard to year 2000. Don't squander those opportunities. □

Yourdon heads the year 2000 service at Cutter Consortium in Arlington, Mass. His most recent book is Time Bomb 2000. *His Internet address is ed@yourdon.com.*

f.y.i.

THE HARDEST-TO-FIND SKILLS

Employees with database, project-management and Windows NT skills are the hardest to recruit in today's information technology market, according to an informal poll of about 130 corporate IT human resources professionals at a recent national conference. Their responses provided a snapshot of the current IT recruiting dilemma.

Other specialties high on IT recruiters' wish lists are experience with enterprise resource planning packages, such as those from SAP AG and PeopleSoft Inc., and expertise in network administration and engineering, software engineering and Unix. Few attendees at the conference, Gartner Group Inc.'s annual IT Symposium in Orlando, Fla., said they need to fill year 2000-related positions or hire programmers in Cobol or other languages.

The human resources people complained of a lack of qualified applicants for top jobs and said candidates with technical skills frequently lack business skills. (See related article, "The new business technologists," in IT Careers, page 106.) "We need 'big picture' business skills, but they don't want to be businesspeople," one attendee said.

"It's difficult to develop a business-savvy population," another complained. "As soon as you start doing that, the techies jump ship."

To make matters worse, consulting firms are constantly raiding their best talent, attendees said. About one-quarter of the companies represented reported losing top performers to consulting firms in the past six months.

Human resources people agreed that competitive salaries are important to retaining highly skilled people, but high pay alone isn't enough. The majority said the most important nonmonetary factor is giving IT people the opportunity to build and apply new skills. Next are recognition of accomplishments, growth within the company and flexible schedules.

— Kathleen Melymuka

Vito Palermo, Senior V.P. & CFO
Metawave Communications, Inc.

How J.D.Edwards SCOREx is helping Metawave give cellular operators more airtime.

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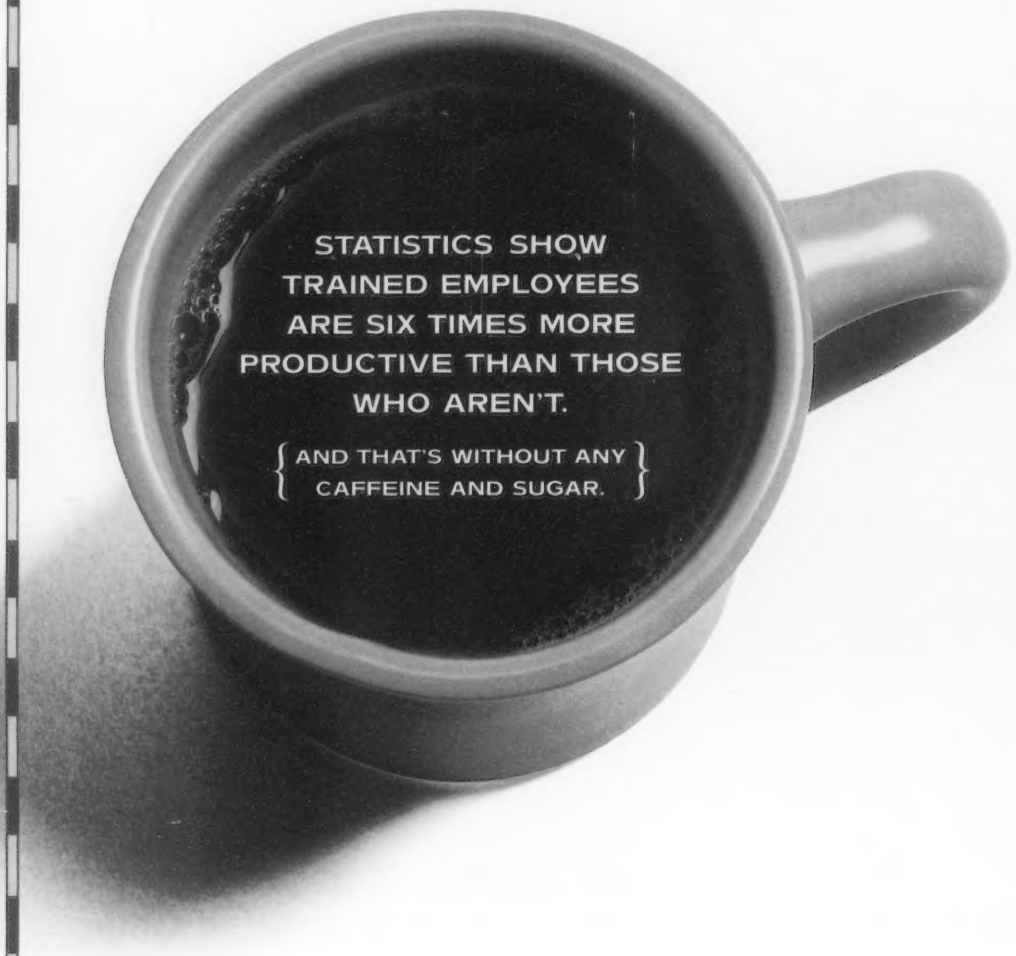

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Review Center

PC Customer Satisfaction

DIRECT HIT

IN *COMPUTERWORLD'S* ANNUAL CUSTOMER SATISFACTION SURVEY, DELL AND GATEWAY COME UP ACES

By James Connolly

It JUST MIGHT be that the start-ups are now the old reliables. Think back a few years to when a couple of mail-order PC makers named Dell Computer Corp. and Gateway took on the big channel-oriented systems vendors such as IBM, Compaq Computer Corp. and Hewlett-Packard Co. It was so easy to write off the mail-order guys as cheesy, inexpensive and not worth the trust of the corporate buyer. Well, that common wisdom doesn't work today. In *Computerworld's* annual Customer Satisfaction Survey on PCs and notebooks, Dell and Gateway came up aces, and it wasn't just a matter of price.

In a mail survey completed by 1,447 corporate managers with PC-buying responsibility for an average of 1,340 users each, Dell and Gateway dominated almost all categories in terms of customer satisfaction, repeatedly scoring better than market leaders IBM and Compaq in the PC sector, and Toshiba Corp. and Compaq in the notebook market. Dell and Gateway scored well across the board, with users giving them good ratings on money issues — pricing and cost of ownership — technology questions and support. The saving grace for the older vendors largely came with HP in desktop support and matters surrounding customer relationships and with IBM notebooks on the technology side.

One caveat: Some results don't represent statistically valid differences. For example, allowing for a standard error of mean of 0.20, Dell's overall satisfaction score of 4.17 may not be a statistically true win over scores such as Gateway's 4.11 and HP's 4.03, but the general strength of Dell and Gateway is clear.

What sets the two companies apart is the simple fact that Dell and Gateway sell direct to the customer. "The feedback loop is very short. You have someone who is charged with making sure their accounts are happy," says Aaron Goldberg, executive vice president at ZD Market Intelligence in La Jolla, Calif. Dell and Gateway also have the advantage of strong internal systems that help them to quickly tell a customer about an order status or to answer a pricing query, according to Goldberg.

"Dell manages their accounts really well without someone else's business being in the way," says Bill Schaub, a vice president at Dataquest in San Jose, Calif. Traditional systems vendors still depend too heavily on resellers, and that prevents them from reacting quickly to customer needs because the resellers may place their own interests first, Schaub says.

Personal computers, page 82

DIRECT HIT Personal Computers

BY KEVIN BURDEN

CONTINUED FROM PAGE 1

OVERALL SATISFACTION

OVERALL SATISFACTION scores show today's PCs leave users with little to complain about. "Beyond always wanting more speed and lower prices, it's hard not to be happy with the quality and availability of PCs," says Eric Sachs, chief technology officer at Interliant Inc. in Houston.

And it's less surprising that both direct-sales vendors score higher than the traditional channel-based vendors because that was nearly the same story in last year's survey. The main difference is Hewlett-Packard. It tied Dell for first place last year but fell behind Gateway to third this year. But it isn't so much HP falling off as it is Dell and Gateway taking customer satisfaction to a new level, according to John Dunkle, an analyst at Workgroup Strategic Services Inc. in Portsmouth, N.H.

Dataquest analyst Bill Schaub says he's surprised that Gateway scored so well in customer satisfaction with corporate buyers when it has had such a focus on the consumer market. "Managing customers really personally" may be what's helping Gateway keep corporate customers happy, he notes. "They're just nice people." □

SATISFACTION LEADERS

How PC vendors ranked in overall user satisfaction

RESPONDENTS 1,393

	DELL	COMPAQ	IBM	GATEWAY	HP	AVERAGE SCORE
RESPONDENTS	(324)	(294)	(182)	(179)	(107)	
Overall satisfaction	1st 4.17	4th 3.99	5th 3.97	2nd 4.11	3rd 4.03	4.05

THE REST OF THE PACK: Of the vendors that received fewer than 100 mentions, Apple posted the best overall score at 4.25.

PRODUCT LINEUP

VENDORS MAY build full lines of desktop systems, but their strengths often lie in a particular class of machine," Dunkle says. And users appear to know where the different vendors fit in their shops' different processing niches.

For high-end systems, HP, Compaq and Dell do equally good jobs keeping users satisfied. HP's first-place score is only negligibly higher than that of the second-place finishers, so all may prove to be good choices for high-end systems. For Gateway, the high-end market is the one area in which it dramatically falls off.

But Gateway owns the midrange and value-class PC market (although Dell challenges Gateway at those levels as it does with HP at the high-end). It isn't too surprising that direct vendors, which historically have offered low prices, top those segments: Gateway and Dell have consistently scored big among budget-conscious users in past customer satisfaction surveys.

Now Dell and Gateway are scoring well at several levels on nonprice issues, such as support and quality.

IBM finished last among the major vendors for the second year in a row. □

PRODUCT LINEUP

How PC vendors ranked in user satisfaction at different price points

CATEGORY	DELL	COMPAQ	IBM	GATEWAY	HP	AVERAGE SCORE
High-end	2nd	2nd	5th	4th	1st	4.59
Midrange	2nd	3rd	5th	1st	4th	4.54
Value	2nd	3rd	5th	1st	4th	4.26

THE REST OF THE PACK: Of the vendors that received fewer than 100 mentions, Apple posted the top score for high-end PCs, while Micron was highest for midrange PCs.

MONEY MATTERS

AS LOW AS prices have fallen for desktop systems in the past year, users are still finding reasons to gripe.

The industry averages for satisfaction in price categories were some of the lowest scores of the survey, but Dunkle says that doesn't necessarily mean users are unhappy with prices, only that they feel vendors can do better.

"We've been paying about the same price for years but just keep getting more in the baseline systems we buy," says Daniel Wendlick, network administrator at Zenith Sintered Products Inc. in Germantown, Wis. "Prices could be much better if vendors kept configurations around longer than they do."

Still, when looking for the best deals in desktop systems, Gateway wins hands down, just as it did in last year's survey. Dell equaled Gateway in satisfaction with overall cost of ownership but came in second in every other pricing category.

As it did in many other categories, Apple posted good scores in cost of ownership, but it didn't draw a large enough number of responses from users to be plotted against the bigger vendors. □

Personal computers, page 84

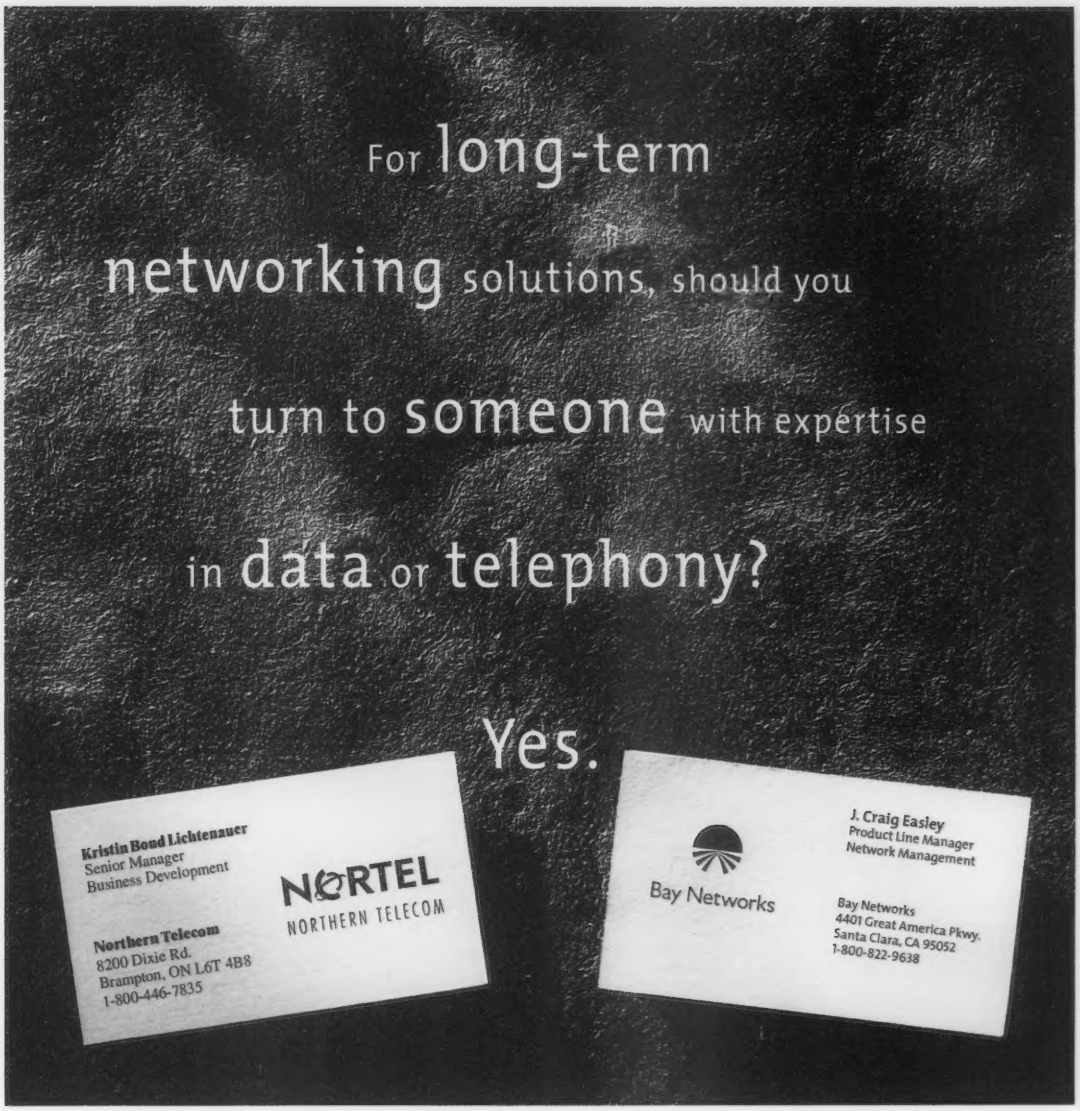
MONEY MATTERS

How PC vendors ranked in user satisfaction on money-related issues

CATEGORY	DELL	COMPAQ	IBM	GATEWAY	HP	AVERAGE SCORE
1998 price cuts	2nd	5th	2nd	1st	4th	4.05
Price	2nd	3rd	5th	1st	4th	3.76
Value	2nd	4th	5th	1st	4th	3.86
Cost of in-house support	2nd	5th	3rd	1st	4th	3.55
Ownership cost	1st	4th	5th	1st	3rd	3.69

THE REST OF THE PACK: Of the vendors that received fewer than 100 mentions, a collection of small suppliers such as local PC makers and mail-order PC vendors ranked first in price and second in value. Apple scored best in the cost of in-house support and cost of ownership.

*** Some rankings may be subject to a standard error of mean.**



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DIRECT HIT Personal Computers

CONTINUED FROM PAGE 82

TECHNOLOGY

TECHNICALLY, desktop systems appear to be delivering just what users want. Satisfaction scores in the technology section were among the highest in the entire survey, and leading all vendors in technical prowess is Dell. At one time, Dell's success was rooted in its pricing strategy, but it's becoming better known today for its technical consistency, Dunkle says.

There's more to Dell's technical success than just reliable, consistent systems. It also delivers configurations perfectly suited for desktop systems, users say. Sachs switched from Compaq to Dell PCs because he no longer wanted to pay a premium for Compaq's promises of quality and service. Sachs also says Dell has done a better job at delivering programmer-class machines (a class of machine falling between standard desktops and workstations) than some of its competition. "Before moving to Dell, we were constantly buying machines that were either too high-end or too low-end for our programmers," Sachs says.

Continuing the great-technology-at-a-great-price story, Gateway took more second-place finishes than the rest of the pack and even shared a couple first-place spots with Dell. □

SUPPORT

BUY FOR THEIR price, buy for their technology — now users are buying from direct vendors for their service. Both Dell and Gateway scored higher in overall service and support than the traditional channel vendors that have always justified higher prices with a promise of superior support.

Dell is becoming especially well-known for its ability to deliver worthy technical support over the Web, according to Dunkle. Dell's site has been a success because it's more than just an order-taking board. "It's a complete soup-to-nuts service, where customers can do anything from tracking orders to searching a troubleshooting database to communicating with Dell's technical support staff," Dunkle says.

Among the channel-based vendors, HP is the best for the second straight year at supporting its users. Paul Gedmin, data center manager at the Florida Aqua Duct Authority, stuck with HP servers and desktops after seeing how committed HP is to serving systems close to their warranty's end. "They've done major repairs on 3-year-old systems for us," Gedmin says. "They have always honored their warranties to a fault, and that's what I appreciate." □

CLOSE TO THE USER

STAY CLOSE to your users and the result is often a very loyal customer base. For example, HP placed below its rivals in most categories throughout the survey, scoring mostly third and fourth in a field of five. But when it comes to vendor reputation and the overall comfort users feel with their vendor, none scored higher than HP. "Hey, HP systems aren't perfect. No [vendor's] systems are perfect. But HP has serviced us like no other vendor we've used, which is why we stick with them," says David Brown, director of IT at McLaren/Hart Inc. in Sacramento, Calif.

But if HP has a rival in customer loyalty, it's Dell. Dell scored closest to HP in the character categories in both this year's and last year's surveys. In fact, ZD Market Intelligence also found Dell to be among the strongest at retaining customers. ZD Market Intelligence tracks the purchases of sites with at least 50% of one vendor's products installed. When sites predominantly filled with Dell systems repurchased PCs during the first half of this year, 76% of those new systems were from Dell.

For the second year, IBM is the vendor users are least comfortable with. □

Notebooks, page 86

RAW TECHNOLOGY

How PC vendors ranked in user satisfaction on key technology-related issues

CATEGORY	DELL	COMPAQ	IBM	GATEWAY	HP	AVERAGE SCORE
System speed	1st	3rd	5th	2nd	3rd	4.14
Reliability	1st	2nd	4th	4th	3rd	4.06
Compatibility	1st	5th	3rd	1st	4th	4.10
Configurability	1st	5th	3rd	1st	4th	3.94
Upgrades	1st	3rd	5th	2nd	4th	3.82
Hardware quality	1st	4th	5th	3rd	2nd	4.11
System management	1st	4th	5th	2nd	2nd	3.66

THE REST OF THE PACK: Of the vendors that received fewer than 100 mentions, Apple scored well in most technology areas, ranking first in speed, reliability,

SUPPORT AND STUFF

How PC vendors ranked in user satisfaction for service and support

CATEGORY	DELL	COMPAQ	IBM	GATEWAY	HP	AVERAGE SCORE
Warranties	2nd	4th	3rd	1st	5th	4.03
Support staff	1st	5th	3rd	1st	4th	3.71
Repair times	2nd	4th	3rd	1st	5th	3.61
Channel-based support	3rd	5th	4th	2nd	1st	3.54
Web-based support	1st	3rd	5th	3rd	2nd	3.68
Overall service/support	1st	4th	5th	2nd	3rd	3.79

THE REST OF THE PACK: Of the vendors that received fewer than 100 mentions, Digital rose to the top in three areas: warranty, support staff and overall service and support. Apple scored best in channel support and Web support.

CLOSE TO THE USER

How PC vendors ranked in user satisfaction with customer relationships

CATEGORY	DELL	COMPAQ	IBM	GATEWAY	HP	AVERAGE SCORE
Vendor reputation	2nd	4th	3rd	5th	1st	4.16
Technical directions	2nd	4th	5th	3rd	1st	4.06
Overall comfort with vendor	2nd	4th	5th	3rd	1st	4.10

THE REST OF THE PACK: Of the vendors that received fewer than 100 mentions, Apple posted the best scores in overall comfort with vendor and technical direction.

*** Some rankings may be subject to a standard error of mean.**

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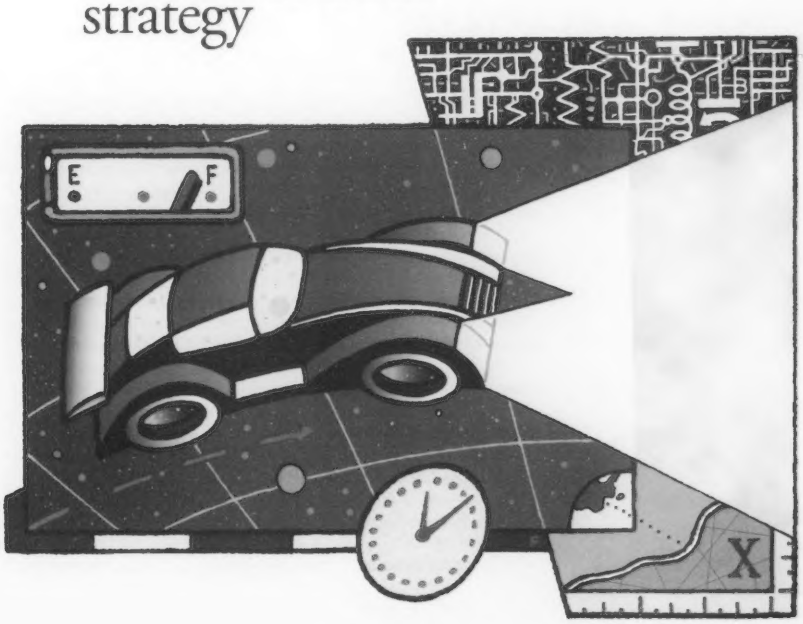
November 16, 1998

illuminating the long, dark road of enterprise computing

a NonStop Best of Both strategy



COMPUTERWORLD
Enterprise Publications

Overview by
AberdeenGroup

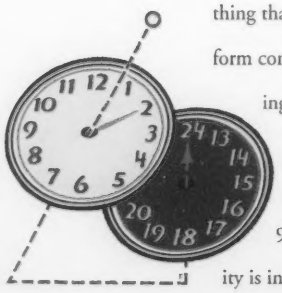
NonStop best of both: extending NonStop Himalaya into the enterprise

by Peter Bochner

Faced with matters of corporate survival, such as Year 2000 compliance, electronic commerce issues and strategies for server deployment, many CIOs are starting to rethink their entire enterprise infrastructures.

This they know: Business cannot be conducted today without an IT infrastructure. Companies need an enterprise foundation that is not only adaptable to business demands, but one that will also increase IT's business value to the enterprise. Therefore, the enterprise architecture must include the four fundamental elements of business value: a company's strategy, its goals, its performance metrics and its management agendas.

With business issues changing constantly, and technology evolving at the speed of light, the enterprise architecture becomes something that companies need to invest in continually. They need to perform continuous fine-tuning on it if they are to balance their changing business needs with IT realities.



Today, for many enterprises, those business needs mean that they must have their computers and networks available 99.9% or more of the time. But even a 99% level of availability is insufficient for certain applications. There are many applica-

Cover and interior illustrations by Mark Fisher

tions that cannot afford even a 0.1% downtime, because that minuscule percentage still translates into 500 minutes of outage per year.

However, whether availability is at 99.9%, 99.99% or even 99.999%, CIOs still have to contend with the implications of unplanned and planned outages, as well as recovery response times. All of this comes down to the need for them to guarantee service levels for their users and customers.

Round-the-clock operation

In the enterprise of today, the need for 24-hour computing is greater than ever, spurred on by the rapid growth of the Internet and global networks. The increasingly global enterprise of today operates around-the-clock in a 24 x 7 world, and in this 24 x 7 global economy, corporations need to run their business-critical applications on continuously available systems.

NonStop® Himalaya® servers from the Tandem Division of Compaq Computer Corp. have been used for years by companies that cannot afford downtime, particularly those whose business revolves around OLTP-intensive environments such as banking, financial systems and telecommunications. Because of that legacy, NonStop Himalaya systems currently handle more than 90% of the world's securities transactions, more than 66% of the world's credit card transactions and more than 80% of all ATM transactions. In addition, they are used by 35 of the world's largest telecommunications companies, by most of the world's stock exchanges, and by the vast majority of the world's banks, including Bank of America and Barclay's Bank.

NonStop Himalaya systems are also used in police, fire and emergency dispatch systems worldwide, and they handle more than half of all the 911 emergency calls in the U.S. They also have a dominant presence inside more than 200 hospitals and health care facilities.

There is one computing environment where NonStop Himalaya servers have not been as prevalent: the corporate back office. However, that is starting to change, as corporations around the world start to recognize the benefits (listed in Fig. 1) of combining NonStop Himalaya technology with Microsoft Windows NT Server to run their enterprise applications.

Figure 1

NonStop Himalaya	Windows NT Server
Downtime protection	Based on industry standards
Exceptional reliability	Open
24 x 365 availability	Availability of innovative solutions
Virtually unlimited scalability	Ease of development
Business-critical Internet transaction processing	Low cost

Systems integration expertise
Enterprise experience

Because of Windows NT Server's promise of an open, low-cost operating environment with virtually unlimited software solutions and options, the corporate market for it is exploding. That explosion is being fueled by the fact that Windows NT-based systems have become too powerful and, at the same time, too inexpensive for IT managers to ignore.

With its recent introduction of clustering software, Microsoft has been able to expand its target markets for Windows NT Server to include enterprise-level servers and business-critical applications. However, Windows NT systems are still evolving to meet the availability demands of today's global enterprises.

Increasing availability benefits

Businesses are discovering that by adding Windows NT Server to the NonStop Himalaya equation, they can realize the availability benefits provided by NonStop Himalaya servers, making for a significantly more impressive solution. After all, NonStop Himalaya servers have set the standard for reliable computing technology by offering users:

failover vs. takeover

Many vendors use a process called failover to increase the availability of their operating systems. In failover, a primary and a backup node communicate their status to one another via a "heartbeat" mechanism. If the heartbeat in the primary node fails, the backup node takes over. Failover products for Windows NT Server include clusters from Digital Equipment Corp., Lifekeeper from NCR Corp., Radio clusters from Stratus Computer Inc. and the Cluster Availability Solution from the Tandem Division of Compaq Computer Corp.

All fault-tolerant architectures, including NonStop Himalaya operating system, use this heartbeat mechanism to determine when the backup needs to take over. But the implications of the takeover on the application differ, depending on whether the operating system is based on process pairs, as in NonStop Himalaya, or failover, as in Windows NT Server. Node failover requires that the application be restarted and reinitialized in the new node. Open files may be damaged or information may be lost. This does not happen with the NonStop Himalaya operating system's process pairs, which transparently switch to a backup node using sub-second takeover.

Failures are unplanned outages; enterprises must also arrange for availability during planned outages, such as online maintenance and reconfiguration. This includes tasks such as swapping a failed board; adding more processors or storage; repartitioning a database; installing a software fix; or changing the revision level of the operating system online. When the NonStop Himalaya's NonStop Kernel operating system performs system repairs and reconfiguration, it hides them from the application. It can dynamically reconfigure and use alternate paths when hardware is removed or installed.

The hardware support for dynamic reconfiguration is hot-plug PCI slots. Online repair requires the abilities to hot-swap a board or peripheral, to detect the presence or absence of a component and to install the replacement component. (This is mainly a software issue.) NonStop systems allow hot-swapping of boards and peripherals. RAID products for Windows NT Server allow disks to be hot-swapped. There are even hot-swappable power supplies.

However, on Windows NT, the repair of processors and controllers requires a reboot. The strategy is to failover to another node, with NonStop software helping to avoid a database outage, then replace the hardware and failback. (A failback is a reboot followed by a failover to restore the applications that had been running on the node before they failed over to other nodes.) The situation is similar for online additions of disks, tape drives, optical devices, printers and controllers.

- a proven record of sub-second recovery time from application failure
- enormous application availability gains compared to off-the-shelf Windows NT Server-based systems, and
- data integrity that is built into the hardware and software.

Compaq calls its program for integrating NonStop Himalaya and Windows NT Server its NonStop Best of Both strategy. This program leverages NonStop system and software technologies, in order to extend both scalability and availability to the Windows NT Server environments. For current NonStop Himalaya users, this program allows them to leverage their existing investment while meeting new requirements, such as data warehousing, distributed applications, and Internet-based processing, and to incorporate them into the enterprise using Windows NT.

There are three scenarios for the integration of NonStop Himalaya and Windows NT Server cluster into the

enterprise. These scenarios are depicted on pp. 5, 6 and 7.

In the first scenario (depicted in Fig. 2 below), a NonStop Himalaya serves as a back end and front end to Windows NT Server cluster. This solution achieves mainframe class throughput, with scalability and reliability being added to a Windows NT Server application environment.

In the second scenario (Fig. 3, p. 6), a NonStop Himalaya serves as a front end to a Windows NT Server cluster. This solution patches the NonStop Himalaya to a Windows NT application server to provide higher availability. In addition, this solution allows middleware, including NonStop Tuxedo, DTC or NonStop Server for Java, to run on the NonStop Himalaya server.

In the third scenario (Fig. 4, p. 7), a NonStop Himalaya serves as a back end to a Windows NT Server cluster. This solution can be used for implementing a data warehouse, for parallel batch processing applications and for legacy applications as well.

In all three of these configurations, Compaq's ability to deliver the NonStop Best of Both means that users stand to gain benefits such as the following:

- *Extended availability to protect the entire solution.* The Compaq advantages of continuous availability and scalability can be cost-effectively applied to an integrated business solution consisting of NonStop Himalaya and Windows NT Server systems.
- *Savings on development and deployment costs.* Applications can be built once, and then be deployed and managed throughout your enterprise—with the same staff using the same cross-platform tools, interfaces and management capabilities.
- *Flexibility to meet changing business requirements.* You can add new solutions as needed, leveraging the strengths of both platforms.
- *Protection of investment.* Existing systems can be evolved beyond their origins to embrace new functions.

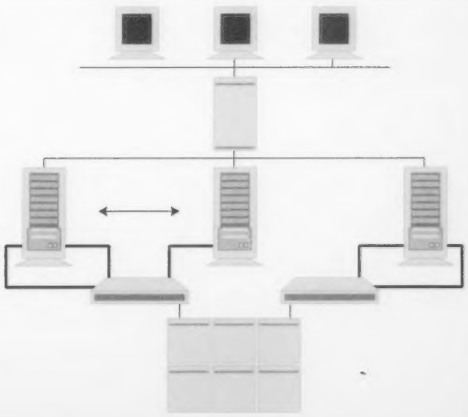
Starting point

What do companies need to turn Windows NT-based servers into reliable and scalable contenders for mission-critical tasks? If they want to accomplish this by integrating Windows NT Server into a NonStop Himalaya environment, the main requirement is a well-planned enterprise architecture. After that, all that's needed are the interoperability con-

The commitment of Compaq to drive NonStop technology into Windows NT environments will allow optimized mixed platform configurations based on business needs, unhindered by technology underpinnings.

Figure 2

NonStop Himalaya as Back End and Front End to Windows NT Server Cluster



- All application code runs on ProLiant servers
- Fault-tolerant network interface
- World-class hardware encryption
- Fault-tolerant transaction switching
- Massively scalable RDBMS
- NonStop Server for Java
- Parallel batch processing
- Mainframe class throughput; scalability and reliability added to Windows NT Server application environment

Driving the acceptance of Windows NT Server into the enterprise

Compaq's server strategy is to drive the acceptance of Windows NT Server into the enterprise. The foundation of this strategy is based on two tenets: 1) evolving high-end hardware and software technology into the Windows NT solutions area, and 2) enabling easy integration on Windows NT with established high-end servers. The ease of integration will allow customers to choose the best platform for a given business function based on availability and scalability requirements.

In addition to Compaq's NonStop Best of Both for Himalaya servers, there are two Compaq product areas that provide tightly coupled integration for heterogeneous enterprise environments that encompass Windows NT. AllConnect is the product of choice for Windows NT and multivendor Unix integration when spanning large enterprises. For OpenVMS to Windows NT interoperability and integration, Affinity provides OpenVMS availability and security while bringing popular, cost-effective, user-friendly Windows NT to an enterprise environment. Compaq provides a comprehensive group of products that open the realm of possibilities in the enterprise.

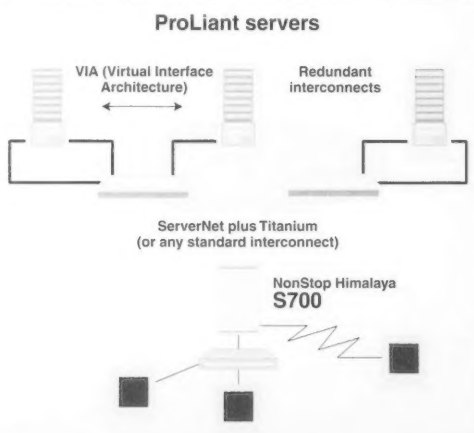
nections between Windows NT and the NonStop Himalaya platform. And the cross-platform solutions from Compaq make this a cinch.

There is no problem in connecting the open Windows NT platform with NonStop Himalaya, because, according to Jim Johnson, chairman of the Standish Group, a research advisory firm in Dennis, Mass., "I'm not sure the question of whether people think of Tandem as open applies anymore. These days, people are concerned with solving real business problems, not fighting religious wars. Tandem has always looked at the hard problems, such as solving the problems of uptime and data integrity."

One way to integrate Windows NT into a NonStop Himalaya environment is through the use of ServerNet Interconnect, a scalable interconnection technology that permits the reconfiguring of alternative paths in case of a failure. While it is possible to configure an Ethernet or other interconnection with similar availability features, Ethernet drivers cannot configure alternate paths. Because of that, it is easier to create a fault-tolerant ServerNet network without rewriting driver software than a fault-tolerant Ethernet network.

Figure 3

NonStop Himalaya Server as Front End to Windows NT Server Cluster



- Application code runs on Windows NT Server
- NonStop Tuxedo, DTC, or NonStop Server for Java run on the NonStop Himalaya server

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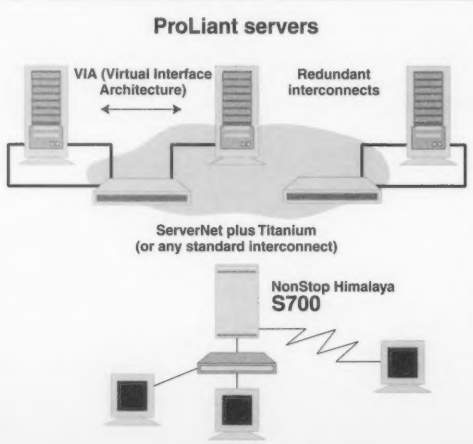

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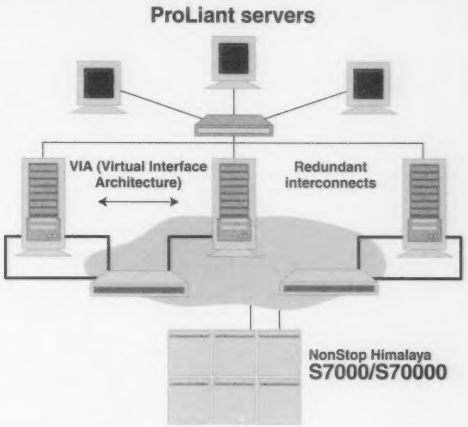
Figure 4

NonStop Himalaya Server as Back End to Windows NT Server Cluster



- RDBMS/data warehouse
- Data integrity
- Legacy application/transaction
- NonStop Server for Java
- Parallel batch processing

Another way of linking up Windows NT Server-based systems and NonStop Himalaya servers is through application server software, which provides access to databases and applications services on NonStop Himalaya servers.

Merita Bank Ltd., which is headquartered in Helsinki, Finland, but has a branch in New York City, conducts banking online using Windows NT Server-based systems with application server software. The software is linked to the NonStop Himalaya operating system. The NonStop Himalaya servers enable Merita's Web-based banking system, which interfaces with legacy systems, to handle up to 43,000 user sessions daily, or a peak hourly rate of 4,000. Downtime simply doesn't fit into the equation at Merita Bank.

Field of contenders

While Compaq is clearly ahead of its competitors in the area of NonStop computing, it is battling a strong field of contenders when it comes to integrating Windows NT into the enterprise. These contenders include Hewlett-Packard Co., IBM, NCR and Sun Microsystems. In addition, Compaq competes with other heavy-hitters in the area of Windows NT middleware, particularly in high availability software and OLTP.

Nevertheless, the company has several key advantages over its competitors. According to Jim Johnson of the Standish Group, the company possesses "the best transaction processing engine ever built." In addition, he notes that the company has "a solid data warehousing strategy, and integrating Windows NT with that will only help."

But Compaq can truly make a compelling case for itself. Buttressed by its acquisitions of Tandem Computers and Digital Equipment Corp. over the past two years, the company now boasts a product line that ranges from portable computers, PC and workstations to Compaq ProLiant and ProSignia file and print servers, ProLiant Windows NT server-based application servers or clustered systems, Digital high-availability systems, Integrity servers, and on the very high end, NonStop Himalaya servers. This wide array of choices gives enterprises an attractive option: the ability to do one-stop shopping as they prepare to meet the challenge of the 24-hour enterprise. ✦

Peter Bochner is managing editor of the Computerworld Enterprise Publications Group.

Enterprises need a coherent architecture for transforming Windows NT servers into reliable, scalable platforms that can help with mission-critical chores.

by Wayne Kernochan
Senior Vice President, Aberdeen Group

NonStop best of both worlds strategy:

Considering the new economies of Windows NT on Intel-based servers and the difficulties enterprises face when trying to replace older systems with NT solutions, it is no wonder that many users today are opting for "mixed" Windows NT-legacy architectures.

But IS executives are wringing their hands over the complexities of integrating their newest (as well as existing) applications with Windows NT servers. Many suppliers of enterprise-class systems have done little to integrate their systems with Windows NT, other than place relatively low-level tools and services on Windows NT platforms and vow to supply the expensive integration services personnel to make something of them.

What is needed to join Windows NT to the enterprise is a full set of tools and services: middleware, development tools, support facilities and a physical interoperability connection between these distinct hardware platforms. (See Fig. 5, p. 9.) Enterprises also need a coherent architecture for transforming Windows NT servers into reliable, scalable platforms that can help with mission-critical chores and can be used in accordance with best enterprise business processes.

To establish a Windows NT leadership position, the Tandem Division of Compaq Computer Corp. has been developing integration products and services geared toward instilling Windows NT-based applications, particularly in clustered configurations, with many of the quality, reliability and scalability attributes found in its no-downtime NonStop Himalaya systems. Through this "NonStop Best of Both" initiative for integrating NonStop Himalaya servers and Windows NT systems, Compaq has prepared both platforms to interoperate, and has supplied an array of tools and services common across both so enterprises themselves can build best-of-both-worlds applications.

Executive summary

As IS buyers search for a reliable method of giving Windows NT environments mission-critical performance and protection, and of integrating Windows NT with the legacy systems, they must not only examine how well a given supplier can address the enterprise's immediate concerns but be able to peer into the future as well.

The company has also parlayed its 1996 declaration of "We want your Windows NT business" into a set of ServerNet Interconnect and NonStop software products and services that substantiate its vision of bringing Windows NT into enterprise-class computing. These technologies include:

- ServerNet Interconnect-enhanced Windows NT clusters that support up to 16 Windows NT Server nodes and that have many NonStop Himalaya characteristics of reliability and scalability;
- The NonStop Services layer that provides software fault tolerance, a single application image and cluster-wide load balancing;
- Middleware, including the NonStop Tuxedo TP monitor;
- NonStop SQL/MX, an example of the NonStop cluster RDBMS architecture which melds parallel operations with a cluster-aware, rules-driven optimizer; and
- An Application Development Environment (ADE) that supports third-party development tools as well as Cobol generation environments for developing applications once that can be deployed to either Windows NT or NonStop Himalaya environments or both.

integrating NT with NonStop Himalaya

By supplementing these core services with management software, Compaq has created an elegant framework for building, running and managing applications that interact in a variety of enterprise styles on Windows NT and NonStop Himalaya servers. This framework will not only spare IS executives from wringing their hands over integrating Windows NT into the enterprise, it will free those hands to push the enterprise toward competitive advantage.

Pays big dividends

Obviously, the NonStop Best of Both strategy will pay the biggest dividends to existing NonStop Himalaya users. With NonStop Himalaya's middleware layer, application designers can envision (and developers can implement) multi-tier applications that rely on Windows NT as a client to a NonStop Himalaya server, that call upon the power of each platform to share client and server responsibility at various points, and that place the two platforms in a peer relationship, distributing functions between them. Moreover, application developers can write once and use these applications on Windows NT or NonStop Himalaya, eliminating the need for (and cost of) redundant development and maintenance efforts.

For example, the versatility of added support for CORBA and Java on NonStop Himalaya, DCOM on Windows NT, and NonStop Tuxedo on both platforms, will empower enterprises to build applications as diverse as OLTP, electronic commerce, intranets and decision support. These services and platforms can also be aimed at what Compaq's Tandem Division has dubbed internet Transaction Processing (iTP)—a combination of the above applications.

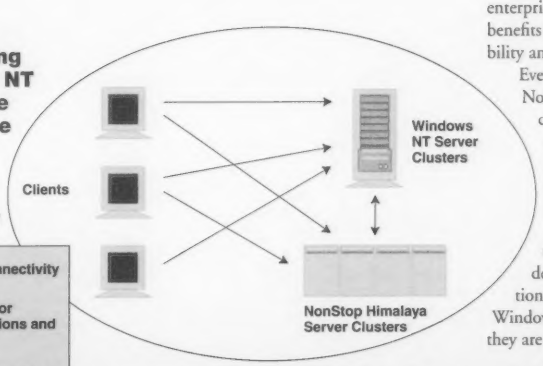
These iTP applications can leverage interactions between Windows NT and NonStop Himalaya via other methods: an application server, which provides access to databases and applications services on a NonStop Himalaya server; Remote Procedure Calls for access from any Windows environment; and interoperability over SNA networks.

Moreover, enterprises can introduce a NonStop Himalaya system into a Windows NT architecture in several ways—for example, by using it as a database server or back end for enterprise applications—to obtain the benefits of NonStop Himalaya reliability and scalability.

Even enterprises outside the NonStop Himalaya installed base can benefit from the NonStop architecture. Many enterprises have been encouraged by the merits of Windows NT in departmental applications but have also seen the telltale signs that their more demanding enterprise applications would overwhelm a Windows NT environment. Whether they are running applications on a standalone server or two systems linked into Microsoft's MSCS cluster, enterprise executives fear Windows NT downtime will occur as

Figure 5

Embedding Windows NT within the enterprise



Source: Aberdeen Group, August 1998

Although most of the industry talks breathlessly about the benefits of Windows NT and the promises of Intel-based NT clusters, few of the largest hardware and software suppliers have taken the additional steps of laying out a blueprint for integrating with Windows NT and for delivering the tools and services that would enable enterprises to build their own truly platform-leveraging applications in the integrated environment.

regularly as their automatic paycheck deposits.

As mentioned earlier, ServerNet Interconnect-enhanced Windows NT clusters support up to 16 Windows NT Server nodes and have many NonStop Himalaya server reliability and scalability features. These complexes can use the ServerNet interconnect to avoid I/O-memory-processor bottlenecks and cooperate with other NonStop software to create true high-performance, Intel-based Windows NT clusters.

Given that Microsoft MSCS software supports just two nodes with a relatively simple failover model, and that multi-node versions will probably not appear until the year 2000 (or beyond), those companies that do not currently use NonStop systems now have a low-cost entry point into high-performance Windows NT clustering with failure protection and a clear scalability horizon.

Enterprises need to give users transparent application access to Windows NT and their other bread-and-butter systems. But they cannot afford to be concerned about which system is performing the task.

Architectural highlights

Enterprises need to give users transparent application access to Windows NT and their other bread-and-butter systems. But they cannot afford to be concerned about which system is performing the task at a given time or whether that system is running in a client-server environment or over the Internet. Developers must also be able to write applications once and deploy them on the most optimal platform, without losing any of the platform's benefits.

Not only has Compaq delivered an architecture that addresses these requirements with a combination of its own and third-party tools, it has also factored in the needs of IS executives for tools that lessen the time to complete a project, simplify training and administration, and reduce risk. Below are some highlights of the NonStop Best of Both architecture.

NonStop Software middleware consists of databases, transaction monitors, object frameworks and support for both the Java and Microsoft ActiveX models.

Included is this middleware is the NonStop Tuxedo TP monitor, which uses BEA's Tuxedo API, and therefore can interact with BEA Tuxedo implementations. Because it eases manageability across the cluster, NonStop Tuxedo is a key element in the creation of a common development and runtime environment that integrates Windows NT in the enterprise.

Compaq supports Internet application scalability on Windows NT and NonStop Himalaya, as well as Internet development via ActiveX, Java, CORBA's Internet Inter-ORB Protocol, JDBC and Java SQL. Interaction among these tools lays a foundation for Windows NT Server and NonStop Himalaya to interoperate.

The NonStop SQL/MX database, a clustered RDBMS, combines parallel operations with a cluster-aware optimizer. An Object Database Connectivity (ODBC) option gives an enterprise transparent access to RDBMSs from multiple suppliers.

Compaq rounds out its middleware offerings with two ORB frameworks: CORBA on the NonStop Himalaya via its Distributed Object Manager/MP for NonStop Himalaya-Windows NT environments, and Server Object Gateway for OLE or ActiveX applications on Windows NT to share functionality with transaction processing applications on NonStop Himalaya servers.

(Aberdeen Group expects that many enterprises will eventually deploy both CORBA and DCOM, and suggests that corporations look for both CORBA and DCOM support from hardware suppliers.)

Consistent with its NonStop Best of Both strategy, Compaq offers its ADE to leverage middleware, which enables developers to write an application once and deploy it on whichever platform (or split between platforms) makes sense for the enterprise. Aware of enterprise needs for Web-based applications, Compaq supplements ADE with Java Database Connectivity as well as Java Virtual Machine in its servers.

The company augments its tool chest with IBM's MQSeries, another mechanism for integrating NonStop Himalaya with Windows NT, which has the added benefit of integrating IBM platforms such as a mainframe. Compaq has also chosen CA-Unicenter to help manage the new integrated environments from a common console. Remote Server Call (RSC), another interoperability tool, allows Windows 95 and Windows NT to access legacy Pathway/TS transaction processing applications on NonStop Himalaya servers.

A coherent roadmap

It is hard to find a supplier that offers more than just a few Windows NT-based tools and a cadre of integration services personnel who are truly expert in the arcana needed to integrate Windows NT with past enterprise systems. But Compaq's Tandem Division stands out for creating a coherent roadmap for transforming Windows NT servers into reliable, scalable platforms and for integrating them in a NonStop Himalaya environment that can be used in accordance with the dictates of the best enterprise business processes.

The company has also delivered the products that flesh out this architecture. Its NonStop Software middleware and development tools are geared toward building and managing applications—on the Internet, in more traditional client-server architectures, or in new combinations. Not only will developers be able to write an application once and use it on different platforms, these applications will be able to incorporate the value of Windows NT without having to lessen the value of the enterprise's other processors to do so.

In integrating Windows NT into the enterprise, as it applies to NonStop Himalaya, Compaq has no real competition. But in the larger endeavor of winning new business based on Windows NT integration prowess, the company will have to battle suppliers such as Hewlett-Packard, IBM, NCR and Sun Microsystems. When the contest involves complex integration issues involving legacy systems, many of these hardware competitors are on equal footing. . .particularly IBM. When the integration is focused more narrowly, other competitors emerge, each having their own strengths.

HP, for example, augments its professional services with network and systems management integration, and has entered into partnership programs with Microsoft to keep Windows NT-based systems up and running. HP also works with Microsoft on building directory services and mail services that are common to both companies.

Conclusion

The Tandem Division's 1996 shift to embrace Windows NT has matured into its current NonStop Best of Both initiative. While this means Microsoft and the Tandem Division can be said to compete in the area of Windows NT middleware (i.e., high availability and OLTP), Compaq dramatically up-enterprises the reach of Windows NT applications. Such is "coopetition."

But when it comes to Windows NT integration, all the competitors of the Tandem Division are still largely in the development labs with respect to clustering, which Aberdeen regards as critical for enterprise scalability and robustness. HP, for instance, has no answer to Compaq's clustering and high availability.

Prior to its merger with Compaq, Tandem, to its credit, gave Windows NT clustering many of the characteristics of its NonStop Himalaya systems. This feature should not be underestimated, for Tandem has clearly paid its dues, transaction by transaction, and has demonstrated that NonStop Himalaya is among the most scalable and robust processing complexes in the world.

Enterprise decision makers would do well to look for these integration solutions from Compaq.✦

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About the author

Wayne L. Kernochan is senior vice president of platforms for Aberdeen Group, Inc., a consulting and market research firm in Boston. Mr. Kernochan implements Aberdeen's Buying Guides for distributed, open RDBMSs and client-server application development environments, as well as consulting projects for Fortune 1000 clients and leading hardware and software vendors.

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DIRECT HIT

CONTINUED FROM PAGE 84

Notebooks

BY AMY MALLOY

OVERALL SATISFACTION

NOTEBOOKS ARE carted on and off planes, tossed in and out of cars, kicked, dropped and spilled upon. They also tend to reside miles from the home office and the helpful hands of the IT staff. The demands placed on them are so much higher than those placed on desktops that it isn't surprising customer satisfaction declines when you start to talk about notebooks vs. PCs.

One universal user complaint is the short life span of notebook technology. It isn't easy to stretch them out to a three-year existence. "Laptops gripe me to no end. . . . There are no vendors out there that make an upgradeable laptop. I want a laptop that is not going to be obsolete in six months," says David Brown, director of IT at McLaren/Hart.

Users and analysts acknowledge that although notebooks still need improvement, vendors have made progress in terms of better service, reliability, durability and prices.

Dell's slight edge can be explained in part by its diverse offerings. "I like the ease of configuration," says Travis Miller, software engineer at St. Jude Children's Research Hospital in Memphis. □

PRODUCT LINEUP

WHEN WE ASKED users to evaluate their vendors' performance in high-end, midrange and value notebooks, it became clear that IBM rules the high end and Gateway and Dell the value market.

For most companies, midrange notebooks are still considered best-suited for the masses, and companies are willing to spend additional funds to obtain the features and durability that come with a midrange product but not with the value notebooks, according to the users *Computerworld* contacted.

As might be expected, satisfaction scores drop a bit from high-end to midrange and from midrange to value.

Quality makes the difference for IBM's high-end and midrange notebooks.

"We are very happy. We use high-end and midrange notebooks. I would rather pay a little bit more for a machine that will work and is a little more rugged," says Jim Ranager, senior systems administrator at the State Fire Academy of Mississippi in Jackson.

"If you get something cheap and you have to repair it quickly, you will spend more money than you did for the good one," he says. □

MONEY MATTERS

A YEAR AGO, users in *Computerworld*'s survey demanded lower prices, and vendors have trimmed prices since then. But not enough.

Almost every user we contacted said that they would like to see all vendors lower their notebook prices even more. Satisfaction scores dropped in cost categories for all vendors.

According to our survey, Dell users are slightly more satisfied than others. "Dell is competitive [in price] with Compaq and Gateway. I would like to see all of them come down. But overall, their price for value against the competition is extremely good," says Travis Miller, a Dell user.

Users point to support as one reason that satisfaction dips for total cost of ownership. "The cost of in-house support is higher for notebooks than desktops. The total cost of ownership is higher as well," says Compaq user Chris Behning, vice president of MIS at General American Corp. in Pittsburgh.

He says that if anything goes wrong, the user has to ship the laptop back to the office, and IT has to ship it back to the vendor. The whole process takes up to a week. □

Notebooks, page 88

SATISFACTION LEADERS

How notebook vendors ranked in overall user satisfaction

RESPONDENTS: 1,209

	DELL	COMPAQ	IBM	TOSHIBA	GATEWAY	AVERAGE SCORE
RESPONDENTS	(255)	(249)	(242)	(207)	(95)	
Overall satisfaction	1st 4.07	4th 3.86	3th 3.95	5th 3.84	2nd 4.03	3.95

THE REST OF THE PACK: Of the vendors that received fewer than 95 mentions, Apple, Micron and Digital posted high scores.

PRODUCT LINEUP

How notebook vendors ranked in user satisfaction at different price points

CATEGORY	DELL	COMPAQ	IBM	TOSHIBA	GATEWAY	AVERAGE SCORE
High-end	2nd	5th	1st	3rd	3rd	4.45
Midrange	3rd	5th	1st	2nd	4th	4.36
Value	2nd	4th	4th	3rd	1st	4.04

THE REST OF THE PACK: Of the vendors that received fewer than 95 mentions, Apple ranked No. 1 in high-end and midrange notebooks.

MONEY MATTERS

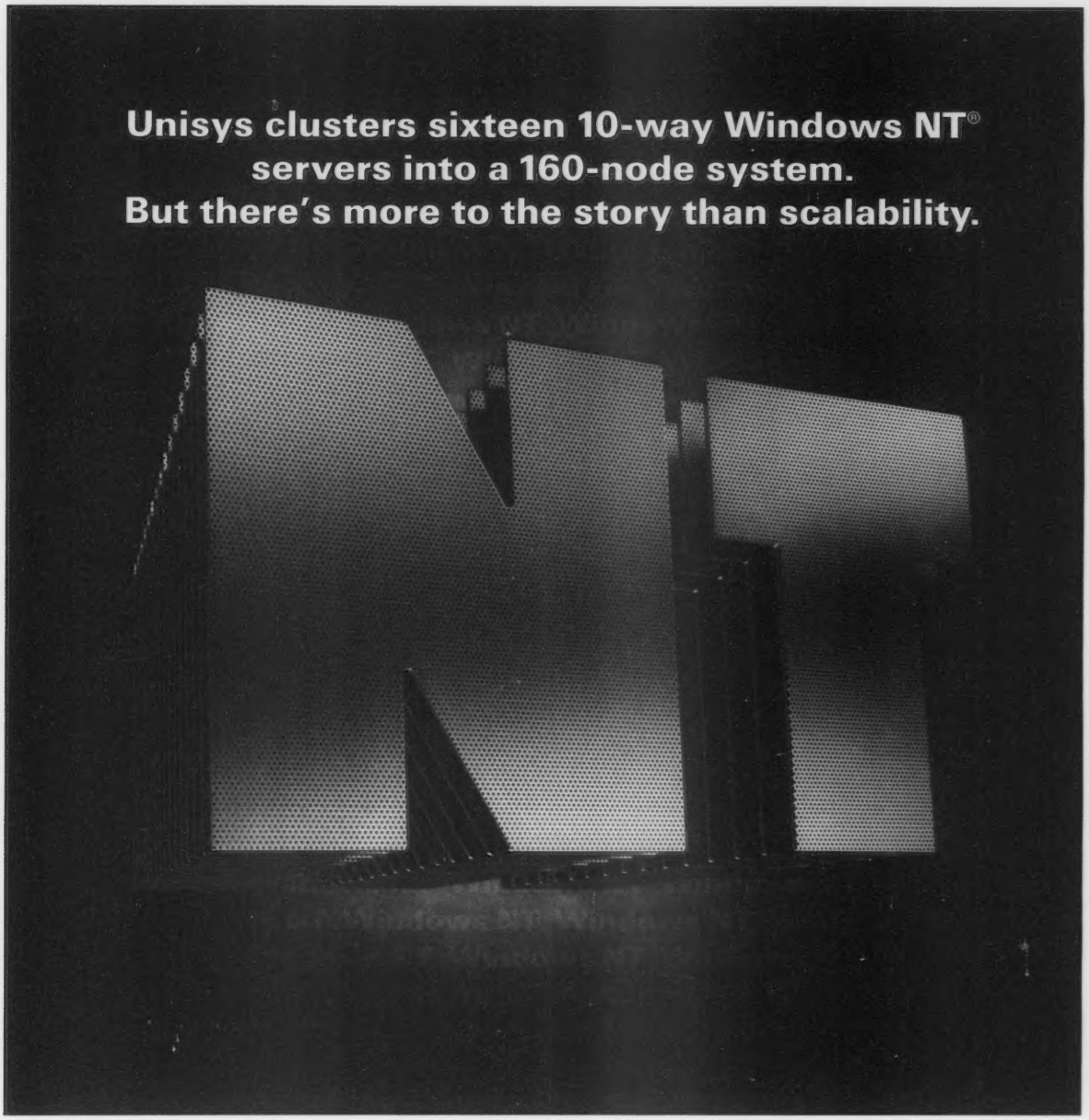
How notebook vendors ranked in user satisfaction on money-related issues

CATEGORY	DELL	COMPAQ	IBM	TOSHIBA	GATEWAY	AVERAGE SCORE
1998 price cuts	1st	2nd	4th	5th	2nd	3.62
Price	1st	3rd	5th	4th	2nd	3.42
Value	1st	4th	5th	3rd	2nd	3.58
Cost of in-house support	1st	5th	3rd	3rd	2nd	3.49
Cost of ownership	2nd	5th	3rd	3rd	1st	3.54

THE REST OF THE PACK: Of the vendors that received fewer than 95 mentions, Apple posted the best scores for its 1998 price cuts and for the cost of in-house support. Digital scored highest for satisfaction with price and value.

*** Some rankings may be subject to a standard error of mean.**

Unisys clusters sixteen 10-way Windows NT® servers into a 160-node system. But there's more to the story than scalability.



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DIRECT HIT

CONTINUED FROM PAGE 87

Notebooks

TECHNOLOGY

LET'S FACE IT. Laptops aren't treated gingerly. So it only makes sense that they don't hold up as well as desktops. In the raw technology category, ruggedness receives the second lowest average satisfaction score, and most of the users we interviewed say they are looking for more rugged products. But users will also admit that notebooks have become more durable over the past year or so.

"I'm sending a lot of them back for repairs — display problems, hard drive failures. They are probably shuffled around a bit on the road. I'm not sure if you can get one that is completely fail-safe," says Compaq user Chris Behning.

Docking stations receive the lowest average satisfaction score under the raw technology category. Users complain that some vendors' docking stations aren't compatible across different product lines or with newer models within the same product line.

"Toshiba was constantly changing their model line. The docking station for one did not work for the docking station for the other. We were constantly upgrading. We don't have that problem with Dell," says Janet Wilson, IT manager at Mutual Insurance Company of Arizona in Phoenix.□

SUPPORT

VENDORS NEED to come up with a better way for users to remotely support notebooks, users say. Notebooks often have to be shipped off-site for repairs, so companies take a productivity hit.

"Laptops are transient. When we want to work on them, they may not be here," says Dell user Joseph Lierl, senior PC systems administrator at Thomas Bros. Maps in Irvine, Calif.

"When users want us to work on them, we may not have time available, and they are not always online when it's convenient for us. I can't see a solution in the foreseeable future. They could have a docking station with some type of PalmPilot hot sync key capability," he says.

Satisfaction scores for Web site support are a little lower than other categories. "It would be a good thing if they were to update on their Web site the software drivers rather than telling people to go to the third party to get the latest and greatest driver," says Janet Wilson, a Dell user. "It would be one-stop shopping if we were able to just go to Dell for the drivers we need to support our Dell hardware."□

CLOSE TO THE USER

MANY USERS we contacted say they're sticking with one vendor for both desktops and notebooks — even if the notebooks are a little more expensive than other brands. This cuts down on the support issues and potential compatibility problems.

"Their notebook prices could be more competitive, but our desktops are Compaqs, and I hated to change brands. The desktops have been great. They are low maintenance," Behning says.

The vendors' technical directions are similar, but newer buying models do stand out and attract users.

"I like their site-dependent Web page," says Travis Miller, a Dell user. "There is a Web page just for St. Jude. You get a quote, which in the past, [the purchasing department] would have to do, and configure the system on the site. You can get purchasing requisitions and quote numbers. It has St. Jude's costs on it."□

RAW TECHNOLOGY

How notebook vendors ranked in user satisfaction on key technology-related issues

CATEGORY	DELL	COMPAQ	IBM	TOSHIBA	GATEWAY	AVERAGE SCORE
System speed	2nd	4th	3rd	5th	1st	4.0
Reliability	1st	5th	3rd	4th	2nd	3.9
Ruggedness	1st	5th	3rd	4th	2nd	3.77
Compatibility	2nd	5th	3rd	4th	1st	3.97
Screens	2nd	5th	1st	4th	3rd	3.92
Docking stations	1st	4th	2nd	3rd	5th	3.63
Hardware quality	2nd	5th	1st	4th	3rd	3.95

THE REST OF THE PACK: Of the vendors that received fewer than 95 mentions, Apple posted top-ranking scores in speed, reliability, ruggedness and quality. Digital scored the best in compatibility, screens and docking stations.

SUPPORT AND STUFF

How notebook vendors ranked in user satisfaction for service and support

CATEGORY	DELL	COMPAQ	IBM	TOSHIBA	GATEWAY	AVERAGE SCORE
Warranties	1st	4th	3rd	5th	2nd	3.94
Vendor staffs	2nd	4th	3rd	5th	1st	3.73
Repair times	2nd	4th	3rd	5th	1st	3.52
Channel-based support	2nd	4th	3rd	5th	1st	3.53
Web-based support	1st	4th	3rd	5th	2nd	3.65
Overall service/support	2nd	4th	3rd	5th	1st	3.73

THE REST OF THE PACK: Of the vendors that received fewer than 95 mentions, Digital scored best on warranties and vendor support staff, while Apple was No. 1 in repair times, channel-based support, Web-based support and overall service and support.

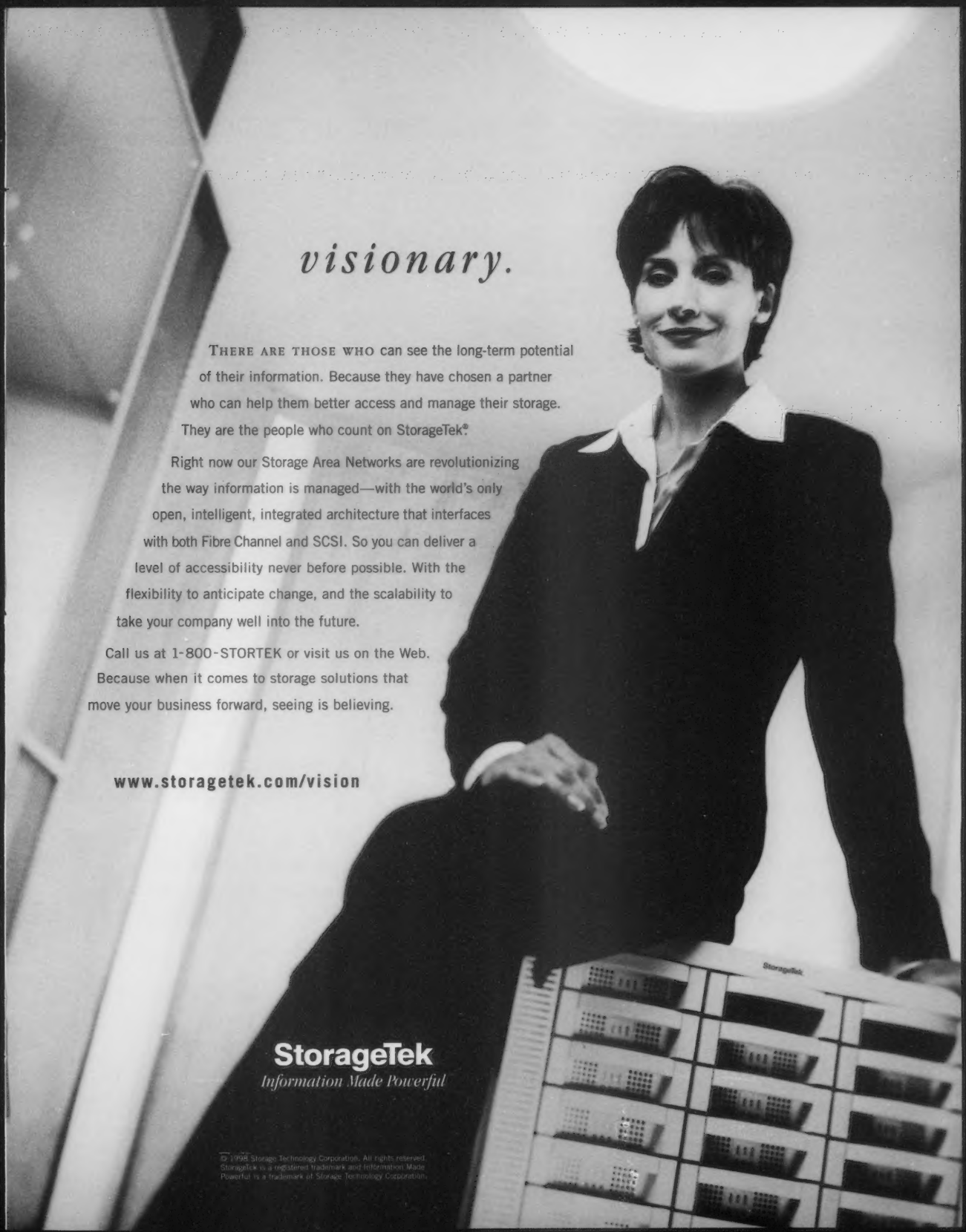
CLOSE TO THE USER

How notebook vendors ranked in user satisfaction with customer relationships

CATEGORY	DELL	COMPAQ	IBM	TOSHIBA	GATEWAY	AVERAGE SCORE
Reputation	2nd	4th	1st	5th	3rd	4.16
Technical direction	2nd	5th	3rd	4th	1st	4.07
Comfort with vendor	1st	4th	3rd	5th	2nd	4.08

THE REST OF THE PACK: Of the vendors that received fewer than 95 mentions, Apple received the best scores in all three categories.

*** Some rankings may be subject to a standard error of mean.**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In Depth

THE HYPE MASTERS

CREATING BUZZ AROUND A PRODUCT OR START-UP IS A BLACK ART. WHAT'S THE SECRET? WE ASKED THE ARTISTS

BY KIM S. NASH

POLLY WANT A GIMMICK?

Philippe Kahn once sent live parrots to computer trade newspapers with a teasing note daring reporters to coax the birds to talk about Kahn's corporate secrets.

LIKE OSCAR NIGHT in Hollywood, Comdex in Las Vegas brings out the best — or is it the worst? — in hypesters. Who can forget the time a few years ago that perpetual entrepreneur Philippe Kahn hired pilots to fly people over The Strip at night?

Every year, carnival-style barkers beckon attendees to product booths while various media players hold "exclusive" parties. Industry honchos give keynote speeches, their teeth as big as diving boards as they smile down from giant video screens.

But Comdex simply magnifies the endless, often insidious promotion that occurs year-round in the information technology industry.

Hype happens. Venture capitalists want to get their hooks in a hot company first. Reporters want to get the big story first. Analysts want to make predictions first. And everyone wants to feel like an insider.

Don't you?

HYPE'S HIGH PRICE

Fact of life though it may be, hype makes your job harder. As you look at emerging technologies, you must filter the flashes in the pan (push technology) from the ones to monitor (Java) and the truly useful (intranets).

"It's all gotten much worse," says Don Blough, vice president of MIS at Foodmaker Inc., a San Diego company that owns the Jack in the Box restaurant chain. "I've been in this business 30 years," Blough says. "At any given time, there's always something being hyped as the new magic bullet."

Dick Hudson, vice president of MIS at Global Marine Corp. in Houston, has seen his share of hype. He likes to trip up sellers by asking for mutually exclusive things. "I will say I want software that automatically does this or that and that I should always be controlling it," he says. "The guy or gal hyping it will try to match the product to that vision. Whatever you want, they sell you."

HYPE HIGH JINKS

Hype is "an odd little game where you participate — but try not to," says Chris Shipley, executive producer of Demo, a new-technology conference put on by International Data Group, the Boston-based owner of *Computerworld*.

A good hype storm, like a thunderstorm, requires the right conditions: the thunder of promoters, the gusty winds of people spreading the word and general turbulence as new weather descends.

Hype masters can achieve a lightning strike without the aid of a public relations guru. Most times, it's enough to unleash a few well-timed tricks on an audience filled with people who truly believe, want to believe or will pretend to believe — just as long as the sham suits their own purposes.

A case in point: "I always said push wouldn't go anywhere, but that didn't stop me from doing a push Showcase," says David Coursey, who with *Upside* magazine was co-producer of Showcase, an annual product demonstration forum and schmooze-fest. But is that honest? "Customers wanted [a push technology show]," Coursey shrugs. "People wanted it. Push was the topic."

Hype today means not only promoting your own cause, but simultaneously undercutting the enemy. It's what venture capitalist Ann Winblad calls "sucking the oxygen away from your competitor" — and a new company must master it.

Amazon.com Inc.'s recent purchase of Junglee Corp. in Sunnyvale, Calif., is a good example, says Winblad, co-founder of Hummer Winblad Venture Partners in San Francisco.

"It effectively took the market-leading shopping agent tool out of the hands of other portals," she

The hype masters, page 93

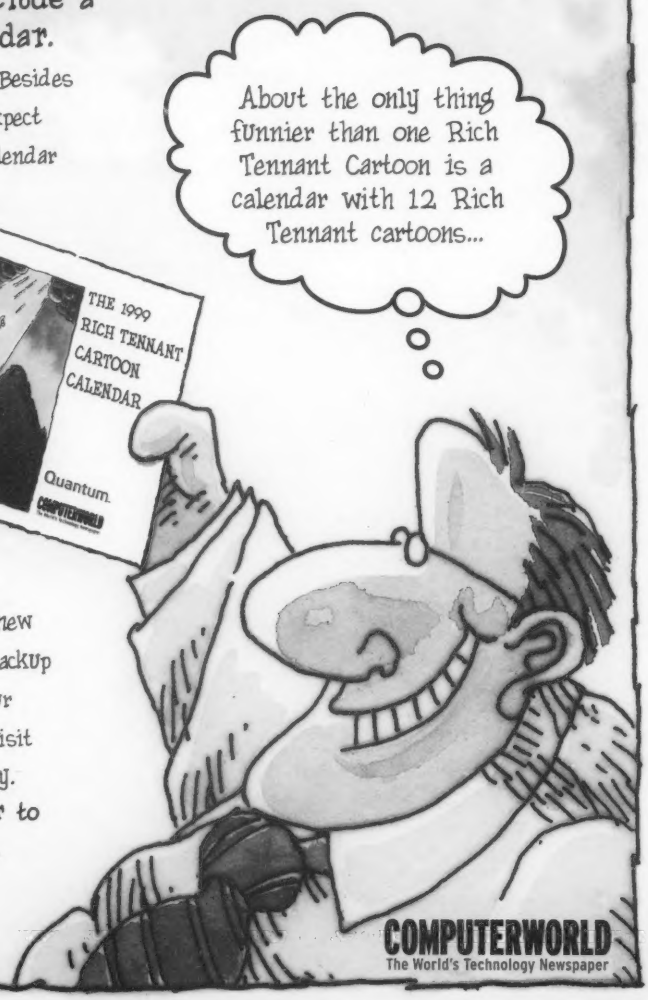
A Timely Announcement From Your Friends At Quantum And Computerworld.

Selected copies of the December 14 issue of Computerworld will include a FREE 1999 Rich Tennant Calendar.

This is one issue you won't want to miss. Besides all the industry insights you've come to expect from Computerworld, you also get a free calendar with some of Rich's funniest cartoons. This year's theme is data backup, archive and recovery. The ideal subject, especially when you consider that Quantum, this year's calendar co-sponsor,

DLT tape and the maker of Quantum DLTtape™ drives and media, knows more about the subject than anybody. So, if you could use a delightful new calendar that also reminds you to always backup your data on a regular basis, check out your December 14th issue of Computerworld or visit the Quantum web site to receive a free copy. **Visit www.quantum.com/dlttape/calendar to receive a Free Rich Tennant calendar*.**

*Hurry, quantities are limited.



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THE HYPE MASTERS

CONTINUED FROM PAGE 91

says. Now, every Amazon.com rival has to figure out how they can own similar technology, she says.

HYPE HIGH WIRE

When hot young companies try to sink the other players on their pond, they must be careful — lest they torpedo their own hulls.

The public relations people at CacheFlow Inc., also in Sunnyvale, negotiate those waters every day.

The company makes software used to store Web-page content for off-line browsing. It competes with well-known Inktomi Corp. in San Mateo, Calif.

CacheFlow is much smaller and, unlike Inktomi, didn't strike it rich with a $72 million initial public offering (IPO). With limited resources, the company must think before it hypes, says a key outside public relations agent for CacheFlow. "Sometimes," the anonymous agent says, "you latch onto other competitors. [Inktomi has] good mind share and a successful IPO. What we say is that *their* approach to caching is flawed — but caching works. You can't take them out at the knees, or the category disintegrates."

CacheFlow's approach is to "educate" reporters about why caching Web pages makes it faster to use the Internet than more bandwidth. "Once we have that, we want stories on which type of caching is right," the source says. And the "right" kind is — voila! — CacheFlow's kind.

Another promotional tactic is to plant a proponent at a conference keynote or other public forum, according to the public relations agent, who also does work for Oracle.

A couple of years ago, he seized on an analyst who was critical of one of Oracle's database rivals, he recalls. The agent called business reporters in the rival's town, asking them to talk to the analyst about stories. "It wasn't us and it wasn't our client. But the analyst got the views out. We landed a fabulous competitive play against the competitor on their home turf," he says.

Earlier this year, public relations manager Peter Dave (pronounced dah-VAY) spent three months wooing *The Wall Street Journal* reporter Don Clark to

The hype masters, page 94

PUSH ME, PULL THIS

COMING DOWN FROM A BAD HYPE TRIP HASN'T BEEN EASY FOR POINTCAST INC.

A 1996 frenzy over push technology paired that concept — perhaps irrevocably — with the company. Push has since become everyone's favorite punching bag. PointCast now runs screaming from the p-word.

"Yeah, we were on top of the mountain," says Bob Sofman, head of marketing and business development at PointCast in Sunnyvale, Calif. That was then. And now? "[We] are now down the side of the mountain."

At the company a scant three months, Sofman says his first move was to expunge "push" from press material and executive speeches. Today, PointCast is all about "relevant personalized content delivered seamlessly to a viewer," he explains.

Can't put that on a bumper sticker.

But maybe that's the point. "I don't want to align ourselves with a term that runs the risk of doing to PointCast what 'push' did," Sofman says.

– Kim S. Nash

FREEBIES!

Oracle Corp. recently sent pricey PalmPilots to more than 100 reporters to promote its portable sales force automation software. And networking vendor Packet Engines Inc. in Spokane, Wash., shipped miniature locomotives that actually chug and whistle.

"It's incalculable how much [being covered in The Wall Street Journal*] matters. Huge. Enormous."*

— PETER DAVE, DAVE & BAIREY COMMUNICATIONS

"I always said push wouldn't go anywhere, but that didn't stop me from doing a push Showcase."

— DAVID COURSEY, CONSULTANT AND CO-PRODUCER OF SHOWCASE

CONTINUED FROM PAGE 93

write about client WebLogic Inc., a Java middleware company in San Francisco. Dave delivered a steady stream of E-mail and hard copy about the company, its customers, partners, investor and admirers.

"It's a packaging job, putting all these elements in motion, so Clark starts to care," says Dave, whose San Francisco-based Dave & Bairey Communications LLC specializes in public relations for venture capital-funded start-ups. Even after Clark finally expressed interest, it took about five meetings and phone interviews with WebLogic executives before he found a story he wanted to write.

(One week after the Sept. 17 publication of the article, WebLogic was bought by BEA Systems Inc. in San Jose, Calif., in a $200 million stock swap. The buyout was in the works before the story ran, and Dave says he didn't know about acquisition talks. The article and the deal appear unrelated.)

Overall, Dave says, "It's incalculable how much that matters — getting covered in the *Journal*. Huge. Enormous." Clark declined to comment.

WE FIGURED AS MUCH

For whatever reason, many public relations pros have degrees in political science. "There are a bunch of us out there," says Tim Marklein at Applied Communications Corp., a public relations firm in Redwood City, Calif. "Lawyers, politicians and PR people have the same sort of personality traits."

HEMLINE HYPE

Recently, the pinup-model aspect to hype in the IT industry has reemerged. But there's a key difference. In the 1960s and '70s, computer advertisements were full of slinky models draped over hardware. These days, the women in IT ads frequently are hyping their own companies.

Katrina Garnett, CEO of applications maker CrossWorlds Software Inc., wears a little black dress in her ads. Esther Dyson, longtime industry watcher, is slated to appear next year in ads for Donna Karan designer clothing. Kim Polese has appeared in 692 magazine cover stories and other articles since she launched Java start-up Marimba Inc. two years ago. *Time* magazine last year named her one of its "25 Most Influential People."

The fact that they're females in power roles is "a factor, certainly" in their hype-stirring success, Polese says. "It's unusual to have a young woman CEO running a start-up. But it's not the only or even the major reason." Garnett agrees, and shakes her head at those who call her black-dress ad sexist. "I've been groomed my whole career to be successful," she says. "And the minute you talk about it, you're slammed for it."

Of course, you can't talk IT hype without mentioning Windows 95. Never mind that Jay Leno hosted the product launch or that Bill Gates licensed The Rolling Stones classic, "Start Me Up." Microsoft Corp.'s Aug. 24, 1995, circus marked a great moment in hype history: The mainstream media — not just the trades — rushed to cover the shipping of a product that everyone knew everything about a good two years before its launch. There were 600 reporters at Microsoft headquarters the day of the big event; in the week of Windows 95's debut, newspapers and magazines nationwide ran 3,670 stories.

Microsoft says it and other Windows supporters spent more than $1 billion marketing the product by the end of 1995.

Years ago, only the trade press was interested in technology. Now it's a media event. "Before entrepreneurs know it, there's a microphone in front of them, and they're talking live on CNN," Winblad says. "If they start sucking all of their own exhaust fumes, it will kill off their brain cells."

Maybe. But the show must go on. □

Nash is Computerworld's senior editor, investigative reports. Her Internet address is kim_nash@cw.com.

THE GATEKEEPERS

NO ONE WANTS TO CALL THEM WOLVES. But when public relations people come to the door, no one jumps up to answer, either. Several key thought leaders in the industry share stories about wild public relations maneuvers – and their own methods for filtering the hundreds, even thousands, of come-ons they get every year.

ESTHER DYSON, chair of EDventure Holdings Inc., a New York-based company that puts on several exclusive shows and invests in start-ups in central Europe.
Nightmare story: A pitchman was waiting at the end of Dyson's lane in a hotel swimming pool to invite her to a public relations event.
Cutting through the B.S.: Depends on trusted friends or colleagues to introduce her to a new company. "What really gets my attention is E-mail from someone I know telling me some company is really worth my attention," she says. "I look at the people [involved and] their experience. Do I know them?"

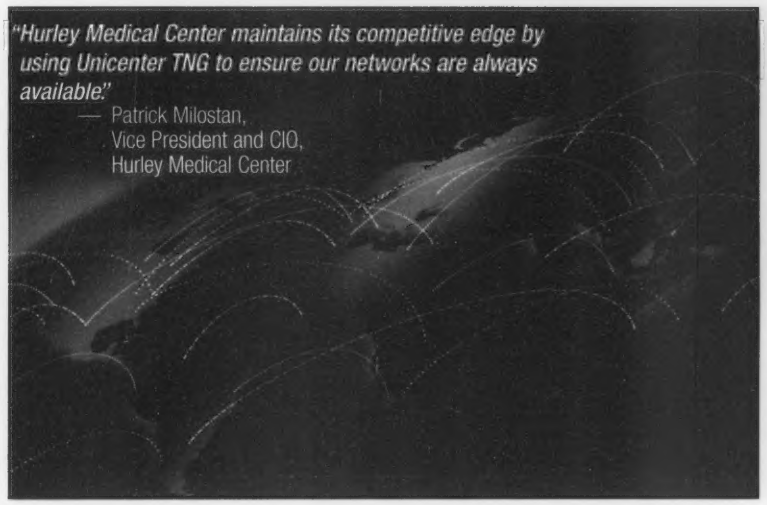
DAVID COURSEY, co-producer of Showcase, an annual product demonstration forum.
Nightmare story: One start-up wrote a 40-page white paper about its products, with Coursey's name printed on every page. It claimed that getting into Showcase was the linchpin of its formal business plan.
Cutting through the B.S.: "You get what you have a reputation for accepting. PR people are trainable," he says.

CHRIS SHIPLEY, executive producer of Demo, a new-technology conference owned by Boston-based International Data Group, owner of *Computerworld*.
Nightmare story: Every year, at least one company rejected for Demo nonetheless tries to latch on. Marketeers find out where the show is held and snag attendees for impromptu product pitches in the hotel lobby.
Cutting through the B.S.: Brute force. At the height of pre-Demo planning, Shipley evaluates five or six companies per day.

ANN WINBLAD, a partner at Hummer Winblad Venture Partners, a venture capital firm in San Francisco.
Nightmare story: One start-up expected to get money in proportion to the thickness of its press-clipping book. "*People* magazine is a poorly targeted media for a tools company," she says.
Cutting through the B.S.: Judges the manner and experience of the company's chief of marketing. "That particular person is critical to the company. That person has one mission: to create a healthy climate for sales. Everything else is supportive to that," she says.

— *Kim S. Nash*

Unicenter TNG Is The Smartest Way To Manage Any Network.



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Matches made in heaven

COMPUTERWORLD'S FIFTH Annual SKILLSSURVEY

Budding Web developer Dan Glascott (below, left) found a sweet deal at Jelly Belly candy maker when IT manager Greg Streeter (below, right) was willing to invest in Glascott's training and skills development to fill a key job

ANDY FREEBERG

GREG STREETER HAD ALL BUT GIVEN UP. Three months of searching for a Web developer with Oracle database administrator skills turned up nary an applicant.

Meanwhile, Dan Glascott was looking for a company willing to build up his limited technical experience (he set up Microsoft Corp.'s Access for a salad processor in Salinas, Calif.).

It was a match — or maybe a compromise — made in heaven.

In June, Streeter hired Glascott as database administrator and Web developer-in-training. His new role is to help manage a growing online candy store and marketing Web site for the Fairfield, Calif.-based Jelly Belly candy maker.

Glascott has since completed a three-week Oracle course, with more Oracle, HTML (the Web programming language) and ICat (an Internet commerce package) in the works. "Now I'm learning something new every day," Glascott says.

These days, job searchers such as Glascott are going after less-tangible incentives such as opportunity, training, challenge and recognition.

"A lot of companies have lost sight that money isn't the bottom line for a lot of people; it's softer issues — like recognition for a job well done," says Kim Riley, vice president of IT recruiting at Recruiting Advantage in Richmond, Va.

Foremost among the "soft" incentives sought by information technology employees are training and education. And in this time of maxed-out pay scales, hiring managers are taking notice. The vast majority of 493 respondents to *Computerworld*'s 1998 Annual Skills Survey plan to develop needed skill sets through training, rather than hiring.

This is very good news indeed for IT professionals such as Jelly Belly's Glascott, who are looking to enhance their skill sets.

Another such IT professional is Iris Rucker, data warehousing specialist at $3.1 billion medical and surgical supplier Owens & Minor (O&M).

Last year, the job listing for O&M's data warehousing specialist at its Glen Allen, Va., technology office sought someone with Oracle, Unix and data warehousing experience. Yet the company's hiring manager settled on Rucker's DB2 and mainframe background.

"The job I'm now doing is challenging. And it gave me a chance to get off the mainframe and do new development and enhance my skill set," Rucker explains.

Stories such as these also indicate that IT managers are being more flexible when filling positions. For example, Don Stoller, director of decision services at O&M, rationalized that Rucker's DB2 knowledge was a close-enough match to Oracle's SQL

Matches made in heaven, page 98

By Deborah Radcliff

Matches made in heaven

CONTINUED FROM PAGE 97

base. And because of Rucker's mainframe experience, Stoller redefined the job to include data extraction from mainframes.

WALTER CALEMAN

Don Stoller (above, right) at Owens & Minor found it paid to be flexible about the skills he was after, when he hired mainframe pro Iris Rucker as his new data warehousing specialist

In Rucker's new position at Owens & Minor, she supports back-end databases that feed into the company's innovative electronic-commerce project called WISDOM (Web Intelligence Supporting Decisions). Using a Business Objects front end, the extranet application will soon extend decision-support services to Owens & Minor's 4,100 customers and 40 suppliers over the Internet.

INTERNET SKILLS HOT

If you predicted that electronic commerce would be the hot new area of opportunity this year, you were right. Of 112 businesses participating in a recent survey by Redwood City, Calif.-based Zona Research Inc., about 88% already market over the Internet; 39% said they plan to move to online procurement by year's end. As electronic-commerce applications take off, companies will look for lots of database administration, middleware and Web development skills.

"The Internet is driving demand for skills in Oracle, PowerBuilder, Visual Basic, Delphi and Java," explains Lee Burnette, account representative for the Jacksonville, Fla.-based temporary employment agency Modis Inc. "I got over 10 calls for PowerBuilder last week."

Much of that demand will be filled in-house. *Computerworld*'s Skills Survey shows that 27% of respondents plan to train HTML programmers next year, 22% plan to train Java programmers, and 13% will train in C++.

But training, rather than hiring, to solve skills needs isn't for everyone. Many companies, such as fast-growing start-up Pacific Gas and Electric Energy Services (PG&EES) in San Francisco, don't have time to train.

With new competition threatening to encroach on its territory, PG&EES must work quickly. And it has, securing $2 billion in business contracts in the past year. To keep up with growth, the company plans to add a dozen IT people to its staff of 100, the majority of whom would support a customer extranet and its corporate intranet (both in progress).

"We're looking for DBAs and developers in Java and C++. And if you know any good Oracle people, have them call me," says Debra Domeyer, CIO at PG&EES, the deregulated spin-off of its holding company, the $15 billion Pacific Gas and Electric Corp., also headquartered in San Francisco.

But hiring ace technicians is costly. "Some of these developers want salaries in the six-figure range," Domeyer says. "We already pay around $90,000 for existing staff. How do we keep things equitable internally?"

Blame it on location. With O&M based in a rural area of Virginia, Stoller pays $50,000 to $65,000 for similar skills. But PG&EES butts up to California's Silicon Valley and all those cool companies that IT professionals want to work at.

Matches made in heaven, page 101

1999's "most wanted" skills

IT managers say the following technology skills top their hiring and training wish lists for next year (top five responses in each skill area)

RANK	INTERNET SKILLS	% COMPANIES WITH SKILL NOW	% COMPANIES TRAINING FOR SKILL NEXT YEAR	% COMPANIES HIRING FOR SKILL NEXT YEAR
1.	Net development tools	33%	23%	15%
2.	HTML	50%	27%	14%
3.	Java	25%	22%	13%
4.	Web server administration	38%	25%	11%
5.	Electronic commerce	17%	13%	9%
RANK	LANGUAGES			
1.	Cobol	35%	7%	17%
2.	C++	31%	13%	13%
3.	C	26%	7%	10%
4.	Micro Focus Cobol	11%	4%	4%
5.	Smalltalk	3%	1%	1%
RANK	DEVELOPMENT TOOLS			
1.	Visual Basic	41%	27%	16%
2.	Oracle Developer 2000	14%	12%	9%
3.	Visual C++	19%	10%	8%
4.	PowerBuilder	12%	8%	6%
5.	Visual J++	7%	6%	4%
RANK	NETWORKING			
1.	TCP/IP	78%	34%	20%
2.	SNA	21%	9%	5%
3.	IPX	31%	10%	4%
4.	WAN-wise	12%	7%	4%
5.	LU6.2	12%	4%	2%
RANK	DBMS AND RDMS			
1.	Oracle	27%	20%	21%
2.	Microsoft SQL Server	31%	24%	17%
3.	DB2	22%	8%	7%
4.	Sybase SQL Server	13%	7%	6%
5.	Informix	8%	5%	5%
RANK	OPERATING SYSTEMS			
1.	Windows NT	74%	45%	30%
2.	Windows 95	87%	23%	13%
3.	Unix	39%	10%	9%
4.	Solaris	12%	5%	6%
5.	HP-UX	16%	5%	5%
RANK	INTERNETWORKING			
1.	10Base-T switching	36%	12%	9%
2.	Ethernet switching	42%	15%	8%
3.	Routing	38%	16%	7%
4.	ATM	11%	6%	4%
5.	Gigabit Ethernet	10%	9%	3%

1999's "most wanted" skills, page 101

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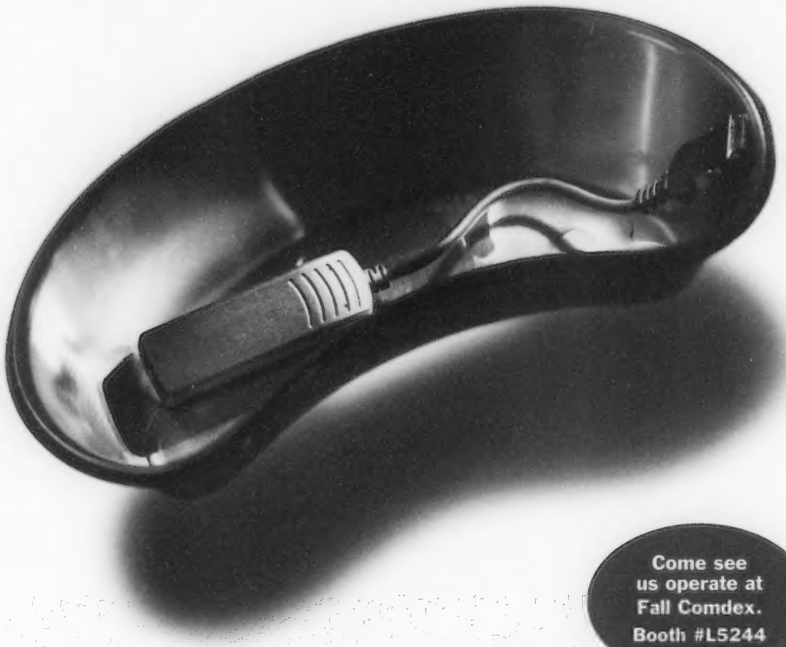

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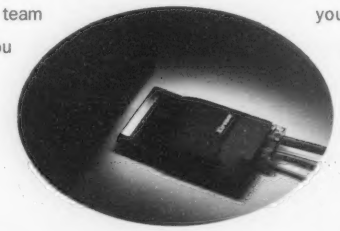

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Matches made in heaven

CONTINUED FROM PAGE 98

In spite of that, Domeyer says hiring is getting easier. It's a little thing, really. PG&EES puts some spin on the company itself in its help-wanted ads: "Put yourself in power. Two hundred and fifty billion dollars. That's how big the retail energy industry is. And At PG&E Energy Services, we're moving full-speed-ahead to become one of the leading companies in this emerging market." Language such as that, Domeyer says, is bringing in more applicants.

Similar recruitment advertising tactics also have improved Jelly Belly's hiring outlook. Four weeks and three job advertising campaigns didn't turn up a single applicant for an assistant IT manager at a Chicago sister company. Then, human resources added a color image of Mr. Jelly Belly, the company logo, and laced the ad with some of the rich history of Jelly Belly's parent company, Herman Goelitz Inc. Sixteen applicants responded, whom Streeter began to interview late last month. "Promoting our company made the difference," Streeter says.

Debra Domeyer, CIO at PG&E Energy Services stresses opportunity, challenge and corporate culture to find top skills in the job market

ANDY FREEBERG

At PG&EES, in addition to Web developers and Oracle administrators, Domeyer has several project management positions open. She isn't alone. Sixteen percent of survey respondents plan to train project managers during the next 12 months.

That represents another opportunity for technical professionals who want to climb the corporate ladder.

Take Sandra Wilson, for example. She developed a bagful of technical and project management skills during her 18-year career, which segued well into her current position as director of business systems and services for PG&EES.

She started on mainframes in 1985, later worked on PG&E Corp.'s first client/server development project, then managed the rollout of a customer information system project before taking her position at PG&EES.

Others, like O&M's Rucker, have no such ambition. Rucker has turned down several offers to move into management.

Still, both Rucker and Wilson share a hunger for learning and a desire to continually improve their skills. Indeed, both say that ongoing education is their biggest reason for staying at their jobs.

"Along with salary and benefits, just the challenge we get here is a great incentive. So are our core values as a company. And I'm not saying this lightly," Wilson explains. As examples, she points to the progressive work environment, state-of-the-art technology and a soon-to-be-offered option to telecommute one day per week.

TO HAVE AND TO HOLD

Retention of existing staff, says Recruiting Advantage's Riley, is now as big an issue as staffing up. And organizations that encourage employees to partake of those intangible incentives dangled during the interview stand a much better chance of keeping their IT staff.

A sense of team camaraderie is a big plus, according to O&M's Stoller. Other suggestions: As their projects go live in other business units, free technologists from their workstations to observe the fruits of their labor. Also, reward them for jobs com-

Matches made in heaven, page 102

CONTINUED FROM PAGE 98

1999's "most wanted" skills

IT managers say the following technology skills top their hiring and training wish lists for next year (top five responses in each skill area)

RANK	LAN ADMINISTRATION	% COMPANIES WITH SKILL NOW	% COMPANIES TRAINING FOR SKILL NEXT YEAR	% COMPANIES HIRING FOR SKILL NEXT YEAR
1.	Microsoft NT Server	59%	35%	19%
2.	Novell NetWare	51%	17%	10%
3.	Ethernet	55%	14%	9%
4.	HTTP	21%	7%	4%
5.	AppleTalk	14%	2%	1%
RANK	OFFICE/E-MAIL/GROUPWARE			
1.	Microsoft Exchange	38%	26%	14%
2.	Lotus Notes	20%	12%	10%
3.	CC:Mail	18%	3%	3%
4.	Novell GroupWise	15%	7%	2%
RANK	CLIENT/SERVER APPLICATIONS			
1.	Oracle	16%	14%	13%
2.	PeopleSoft	8%	8%	7%
3.	SAP	5%	3%	4%
4.	J. D. Edwards	5%	5%	3%
5.	Lawson	3%	3%	3%
RANK	SYSTEM SOFTWARE & SUPPORT			
1.	Year 2000 conversion	47%	15%	13%
2.	Help desk	40%	16%	12%
3.	Data warehousing/mining	18%	20%	11%
4.	Project management	38%	16%	10%
5.	Network management	47%	18%	9%

Note: Percentages have been rounded off to the nearest tenth. Base: 493 IT hiring managers

When hiring turns to hell

Tech skills that IT managers say were the hardest to find this year in the job market:

RANK	SKILL SET	% RESPONDING
1.	Oracle	15%
2.	Unix	13%
3.	Networking	12%
4.	Cobol	11%
5.	Database management skills	10%
6.	Microsoft NT Server	9%
7.	AS/400	6%
7.	Internet experience/skills	6%
7.	Visual Basic	6%
7.	Project management	6%

Note: Percentages have been rounded off to the nearest tenth. Base: 493 IT hiring managers

Matches made in heaven

CONTINUED FROM PAGE 101

pleted on time. And continue to motivate them with additional training and opportunities.

Stoller's group enjoys getting together over pizza to celebrate a job well done. And Stoller's planning a weekend retreat at the lakeside vacation home of a company executive.

While employers clamor to hire and retain IT skills, the responsibility for landing — and keeping — that perfect job still rests squarely on the shoulders of the job hunters themselves.

Applicants shouldn't become complacent, Riley warns.

"It's still a picky market. Companies are looking for the top performers," she says. "You must present yourself professionally, show good energy and do your homework before the interview." □

Radcliff is a freelance writer in Santa Rosa, Calif.

Leaving no stone unturned

IT hiring managers say the most-effective methods for acquiring needed skills and people are:

RANK	RECRUITING METHOD	% RESPONDING
1.	Placement firms/headhunters	37%
2.	Newspaper and magazine classifieds	17%
2.	Referrals from peers/contacts	17%
4.	Promote from within/train in-house	15%
5.	Internet ads	14%

Note: Percentages have been rounded off to the nearest tenth. Base: 493 IT hiring managers

Worth their weight in gold

Salary "premiums" paid for top skills to permanent employees, above their annual salary:

RANK	TECHNOLOGY SKILL SET	% SALARY PREMIUM PAID FOR SKILL
1.	Gupta SQL Base	29%
2.	Centura (Gupta) SQL Windows	20%
2.	Baan	20%
4.	SAP	17%
4.	Oracle	17%
6.	Progress (development tool)	15%
7.	Progress (database management tool)	14%
7.	Lotus Notes	14%
7.	Microsoft Exchange	14%
10.	Data warehousing/data mining	13%
10.	Decision-support systems	13%
10.	DB2	13%
10.	Oracle	13%
14.	Cobol	12%
14.	WAN-wise	12%
14.	Apple Macintosh	12%
14.	DOS	12%
14.	10Base-T switching	12%
19.	Oracle Developer 2000	11%
19.	TCP/IP	11%
19.	Windows NT	11%
19.	AppleTalk	11%
19.	CC:Mail	11%
19.	GEAC (Dun & Bradstreet)	11%
19.	Project management	11%

Note: Percentages have been rounded off to the nearest tenth. Base: 493 IT hiring managers

Investments that really pay off

Salary "premiums" paid for top skills to contractors, above their normal compensation rate:

RANK	TECHNOLOGY SKILL SET	% SALARY PREMIUM PAID FOR SKILL
1.	Progress (development tool)	35%
2.	Centura (Gupta) SQL Windows	33%
3.	Novell GroupWise	29%
3.	GEAC (Dun & Bradstreet)	29%
5.	J. D. Edwards	26%
5.	Data warehousing/data mining	26%
7.	Oracle Developer 2000	25%
8.	Oracle (database management tool)	24%
8.	SAP	24%
10.	Lawson	24%
11.	Baan	23%
11.	ActiveX	23%
13.	PowerBuilder	22%
13.	MVS	22%
15.	Decision-support systems	21%
16.	Oracle	20%
16.	HP-UX	20%
17.	Electronic commerce	19%
18.	Visual C++	18%
18.	WAN-wise	18%
20.	APPC	17%
21.	Internet development tools	16%
21.	Java	16%
21.	Visual Basic	16%
24.	Cobol	14%
24.	Visual J++	14%

Note: Percentages have been rounded off to the nearest tenth. Base: 493 IT hiring managers

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Answers for the Information Age

IT Careers

The New Business

BY NATALIE ENGLER

It didn't take long for executives at Fidelity Investments to spot David Kramer's potential. Once they realized the program manager could recognize a business opportunity as well as handle the technology that could make it happen, they created a new position for him.

Today, Kramer is director of operations for a custom publishing subsidiary. As such, he's responsible for making sure the technology relates to the company's operations. He reports to the president. The technology organization reports to him.

"If you have both business and technology skills, good things will happen," Kramer says. That is, of course, if you consider being promoted — and highly compensated — to be "good things."

Kramer is a member of a growing class of information technology staffers dubbed "business technologists." Able to communicate with nontechnologists, and thoroughly versed in the businesses in which they work, these people are rising quickly to the top of companies worldwide.

One company that grooms and promotes business technologists is Sears, Roebuck and Co. in Hoffman Estates, Ill. Joseph Smialowski, vice president and CIO, says that when he recruits senior executives, he looks for persons with both business and IT backgrounds.

Business and IT, he notes, "are the skills you need to foster a business partnership and meet business needs."

But, Smialowski says, business literacy isn't just a requirement of senior executives; it's important for everyone in his organization.

"If you aren't able to evolve into those roles and responsibilities, you are in jeopardy. You will not be going where the IT profession is going," he says.

David Foote, managing partner at Cromwell Foote Partners LLC, a management consultancy and research firm, says this is a trend that extends well beyond Sears.

He predicts that "seven to 10 years from now, there will be no information technology organization as we know it today." Instead of units comprising technologists, there will be teams led by MBA-types who stand at the juncture of business and IT.

If you look around, you'll see that Foote's prophecy has already begun to materialize. As PC and Internet technologies proliferate and companies outsource their pure technical work, "the demand for that layer between the pure technologist and the business [specialist] has increased tenfold," says Matthew Corbett, who recruits computer consultants for Winter, Wyman Contract Services, the computer-consulting wing of a placement firm in Waltham, Mass.

We visited with three business technologists for an inside view of their career paths, what they do and what it takes to be one.

Engler is a freelance writer in Arlington, Mass.

BUSINESS TECHNOLOGIST SALARIES

Often known by the title of director of business technology, the new business technologist commands a very fine salary indeed. Here are salary ranges in some top city markets.*

CITY	LOW SALARY	AVERAGE SALARY	HIGH SALARY
New York	$127,000	$161,000	$195,000
Atlanta	$124,000	$158,000	$191,000
San Francisco	$110,000	$140,000	$170,000
Chicago	$107,000	$136,000	$165,000
Washington	$105,000	$133,000	$161,000
Los Angeles	$101,000	$129,000	$156,000
Seattle	$98,000	$125,000	$152,000
Boston	$98,000	$124,000	$150,000
Dallas	$96,000	$122,000	$148,000
Philadelphia	$91,000	$116,000	$139,000
Houston	$90,000	$115,000	$139,000
Detroit	$88,000	$112,000	$135,000
St. Louis	$84,000	$107,000	$130,000
Minneapolis	$81,000	$103,000	$125,000

*Annual bonuses range 10% to 30% above the salary totals shown. Note: All salary figures have been rounded to the nearest thousand.
Source: Cromwell Foote Partners LLC

Technologists

Julia Austin

Corporate manager, PeopleSoft applications
Partners Healthcare Systems Inc.
Boston

BACKGROUND: Austin worked at New England Medical Center and Coopers & Lybrand LLP, both in Boston. She received an MBA/MIS degree from Boston University.

ROLE: She's responsible for production management. Her group (she has four direct reports and up to 15 consultants at any given time) is the liaison between the technical team and the functional departments that use PeopleSoft software. "We're like translators," she says. Her group does requirements analysis and explains objectives to the technologists, in addition to setting priorities for and implementing initiatives.

A former boss came to Partners and recruited Austin for her knowledge of materials management and financial systems.

VIEWS ON BUSINESS TECHNOLOGIST VS. CONSULTANT: "I want to be sure the business owners are making the right decisions about using the technology to support their businesses, without hindering them somewhere else down the road," Austin says.

She tries to help them understand how their decisions will affect the business "without overwhelming them with the real techie details." In consulting, "there is a lot more emphasis on the strong individual contributor," whereas at Partners, there's "more of a team approach," she says.

BIGGEST CHALLENGE: Balancing all the variables. In addition to PeopleSoft, Partners owns electronic data interchange (EDI), handheld computing and laser-check printing applications. Its "business owners" have a wide range of skill sets and objectives. "Sometimes just navigating through our own internal processes is a challenge," Austin says.

REWARDS: Going live with one of PeopleSoft's largest, most sophisticated implementations. It has 2,000 users, 40 interfaces, four third-party applications and, Austin notes, "the biggest Compaq server ever made at the time."

The system provides just-in-time inventory and delivery of medical and surgical supplies via EDI.

"Right now, I'm very happy," Austin says. "My most important career goal is to always be challenged. I don't want to get bored. There is no way at Partners I'd ever be bored."

CAREER ADVICE: "Work in industry first, go into consulting [for grooming and enhanced business knowledge] and then come back," she says. "The prior business experience will lend credibility to your consultative responsibilities."

The new business technologists, page 109

grooming and enhanced business knowledge] and then come back," Julia Austin says.

So, who are these people?

Who are these business technologists? What do they do? How did they get there? And what kind of salaries do they earn? Here's a glimpse:

WHO: Business technologists, Cromwell Foote Partners' David Foote says, are project managers, process managers, advisers and analyzers, resource brokers, marketers and salespersons, facilitators and coaches and more.

Some were consultants who seized the opportunity to run a business (and use it as a stepping-stone to an executive position) and move into a corporate role. Others started out in either the business or IT division of the company and made it a point to learn more about the other side.

Business technologists may be IT people, such as David Kramer, who have gone back to school for dual degrees in information systems and business administration. Or they may be businesspeople who are honing their technical skills.

"We see a lot of people who were midmanagement," says Rick Freeman, director of sales for public programs at Boston University's Corporate Education Center. There are managers, accountants, systems analysts and MBAs. "Nowadays, because there's such a shortage of skills, companies expect people not only to put together a plan for a migration, but . . . [to] roll up their sleeves and implement it," he says.

WHAT: Business technologists decide whether to hire, rent or develop workers with technical skills. They negotiate with high-level business-application developers for resources, figure out who should be on the team, understand the financial impact of rolling out a technology in a given company and communicate to users the advantages of using new technology to its fullest.

"These people act as the grease on the wheel," says John Challenger, executive vice president at Challenger, Gray & Christmas, an international outplacement firm in Chicago. "They make the machine run smoothly."

HOW MUCH: This year, business technologists are earning salaries that average close to six figures, according to Cromwell Foote Partners. Business technologists, who align technology solutions with business strategies, working primarily with senior management and people in corporate finance, administration and human resources departments, earn an average base salary of $95,148 per year nationally.

Senior business technologists, who are also responsible for aligning technology solutions with business strategies, working with client senior management in the business units and corporate executives, earn an average base salary of $109,448. Directors of business technology earn an average salary of $127,335. Total cash compensation usually adds another 20% to 30%, Foote says.

But with those weighty salaries come heavy-duty responsibilities. Those at the helm are the folks held accountable for the IT and business-system alignment. They assess requirements and inform the IT organization of business trends, management needs and concerns. And they simultaneously manage business units' expectations.

The salaries may seem staggering, but business technologists' bosses tell Foote off the record that business technologists are worth 10 times what they are getting paid.

— Natalie Engler

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The New Business Technologists

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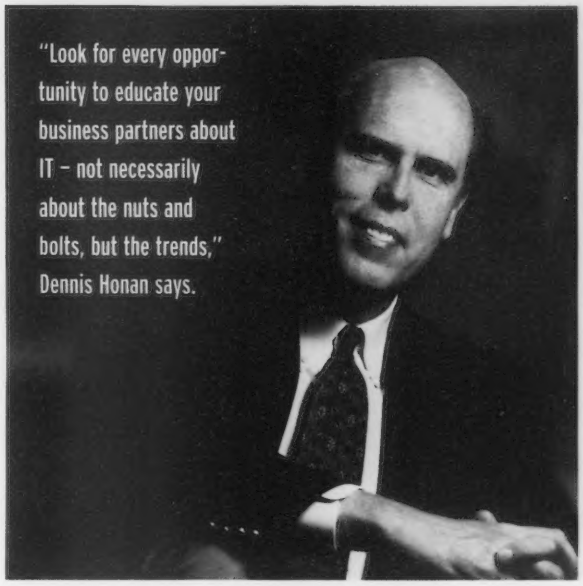

MICHAEL L. ABRAMSON

Dennis Honan

Vice president of Home Services Information Systems
Sears, Roebuck and Co.
Hoffman Estates, Ill.

BACKGROUND: Honan spent 25 years in the IT/business profession, starting out as a programmer at Travelers Insurance Co. in Hartford, Conn., and Blue Cross/Blue Shield of Western New York in Buffalo. After seven years, he went to work at Ryder System Inc. in Miami, where he spent 17 years working on human resources, vehicle maintenance and vehicle purchasing systems. He transferred to Ryder's Aviation Group, where he headed up applications development and eventually became CIO. In 1994, he ran the Aviation Group's parts-distribution business and was responsible for finance and administration concerns.

ROLE: He heads the IT organization for Home Services, a $10 million Sears business that handles appliance repair, maintenance agreements, service contracts and home improvement services such as roofing, siding and pest control. It was a new, heavily IT-dependent business, so Honan was part of the business executive team that developed it.

Honan was chosen because he understood not only IT, but inventory management, operations, supply chains and, he says, "the key drivers that make a business successful." That's been important, he says, because as a member of the executive leadership team, "we talk not only about IT, but about what our marketing campaign should be and what the business models should be like. Because of my background, I can add a lot to those conversations."

TURNING POINT: In the Ryder Aviation Group, Honan recalls that "as I got more involved [in inventory management and customer proposals], the president felt I could handle more business responsibilities." Those included sales, the finance organization and the $300 million parts-distribution business. Having profit-and-loss responsibility "made me much more effective in an IT role," he says. "When you are on the firing line . . . it gives you a whole new understanding of how IT can help the business — and also how it can hurt the business if things don't go smoothly."

BIGGEST CHALLENGE: Because "the opportunity is so enormous in the Home Services arena," Honan says, "[we are] realizing that we can't do everything at once," notably "establishing the right priorities and then doing a great job of implementing the priorities . . . as quickly as the businesses need them."

REWARDS: Seeing projects unfold. Two years ago, for example, Honan's team established a strategic implementation plan with its business partners. It included rolling satellite-connected PCs carried by appliance repair technicians, computer-aided routing and the ability for customers to reach formerly disparate Sears businesses through one toll-free number.

CAREER ADVICE: "Look for every opportunity you can find to get involved in the business. . . . If you're sitting in a meeting and they need a subcommittee to figure out how to increase market penetration, volunteer," he says. "It will increase your knowledge of the business. It will also allow you to build a relationship with your business partners. Also, look for every opportunity to educate your business partners about IT — not necessarily about the nuts and bolts, but the trends. If you can bring them to seminars and workshops or expose them to other businesses in which you may be benchmarking, that will help them learn about IT, [about] you as an individual, and [will help you] build better partnerships and a more effective IT organization."

David Kramer

Director of operations and technology
Devonshire Custom Publishing, a 30-person Fidelity Investments subsidiary that publishes portfolio information for investment companies.
Boston

BACKGROUND: Kramer graduated from Clarkson University in Potsdam, N.Y., with a degree in finance in 1987. He worked at Arthur Andersen's Business Systems Consulting group, implementing financial solutions for small to midsize companies. After three years, Kramer left to get a combined MBA/MIS degree at Boston University.

"I thought it would let me advance along that same path," he says.

It did. SwissBank recruited him from that program and enrolled him in its management trainee program. He was then assigned to the Trading Technology unit, which implemented trading systems.

Three years ago, he joined Fidelity as a business program manager. In that role, he coordinated business activities for a large systems project that spanned several Fidelity companies.

Today, he's responsible for the operational department and technology group at Fidelity's Devonshire Custom Publishing unit. He reports to its president, Ellen Hoffman.

ROLE: Everything from managing systems projects to managing monthly production cycles, helping define company strategy to managing costs, hiring people to defining long-term technical strategies and architectures. "It's a fun job," Kramer says.

VIEWS ON BUSINESS TECHNOLOGIST VS. CONSULTANT: The roles are similar in that "you attack a problem, come up with alternative solutions, pick one and implement it," Kramer says. The difference: When you're a business technologist, he says, "there is more of a sense of ownership."

BIGGEST CHALLENGE: "Making sure people . . . who are not technologists can use [the technology]. . . . That's a big part of what being a business technologist is. It isn't just being able to get a system to work but to get people to be able to use it and take advantage of it," he says.

REWARDS: "I like the breadth. You get to be involved in a lot of different things on a lot of different levels," Kramer says.

In addition, "it has been nice to come in here and lay out a blueprint of where the company and the technology is going to go and see it unfold throughout the course of the year," he says.

CAREER ADVICE: Get a dual degree. It "prepares you to be able to frame a problem and work with technology people," Kramer says. □

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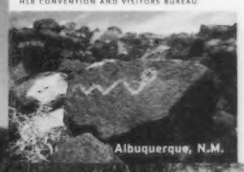
REGIONAL SCOPE

The Southwest

Sizzling Southwest

BY JILL VITIELLO



THE SOUTHWEST is a region boasting more-than-abundant sunshine, balmy winters and state flowers that are actually desert plants such as the saguaro cactus. And for information technology pros, the desert Southwest job market couldn't be hotter.

Of four major Southwestern cities, Phoenix is the most sizzling. The largest city in the region, it has more employers and a broader economic base than Albuquerque, N.M., Las Vegas or Tucson, Ariz.

"Phoenix has become a technology hub," says Michelle Negri, business unit manager at the IT division of Romac International Inc., a recruitment firm. "People refer to it as the 'Silicon Desert.' "

For those IT pros who want the casual, multicultural, Southwestern lifestyle without the pace of a big city, Albuquerque and Tucson offer plenty of jobs, but at a somewhat lower pay rate. Las Vegas, the fastest-growing city in the U.S., offers IT pros opportunities in a culture of business, tourism and gambling unlike anywhere else on Earth.

ALBUQUERQUE

Twenty years ago, Terry Boulanger left Connecticut for New Mexico. Now, "You couldn't get me to live back East on a bet," says the director of business development services at New Mexico Technet Inc., a nonprofit firm in Albuquerque that links the state's agencies, universities and research labs.

Boulanger hires LAN and WAN pros and programmers who build Internet interfaces. He also looks for professionals with PC and modem experience to handle customer support.

He usually draws from Albuquerque's local IT talent pool, but he does hire people who are willing to relocate to the city on their own.

Thanks to its high elevation, Albuquerque has four temperate seasons. "Salaries here are about 10% to 15% lower than on the East Coast," Boulanger says. But housing and fuel costs are lower, too.

LAS VEGAS

Bob Weaver bets people probably have the wrong idea about Las Vegas. "Some people have the misperception that Las Vegas is not a bona fide business center — that it's more of a gaming and entertainment center," says Weaver, director of applications services at Southwest Gas Corp. "People who relocate here find that technology advances are being pursued. They also find a good quality of life and a moderate cost of living."

Weaver has been in Las Vegas for 14 years, which is "as close as you get to a native." His 100-person IT shop needs IT pros with "across the board" mainframe skills, CICS, Cobol and client/server skills. He's also seeking Oracle database administrators and developers. "The job market in Las Vegas is tight right now, but no tighter than in any other region," he says.

Weaver and his team take advantage of the huge Comdex computer show held in Las Vegas. "Comdex is good for the city and good for us," he says. "It gives us a good opportunity to connect and network with vendors and see technology advances firsthand."

PHOENIX

Phoenix is rising in the minds of many companies looking for an attractive place to set up IT shop. "Many companies have moved their data centers here," Negri says. "Real estate is affordable, and data centers are safe from natural disasters."

Oracle database administrators and developers are the hottest commodity now, according to Negri, who says she's recruiting people from out of state to fill jobs in Phoenix. "The market is so hot, if clients don't move quickly, the candidate is gone," she says. Many with top skills and several years' experience can earn upward of $80,000, Negri says.

The need for SAP experts is cooling, as companies have completed SAP implementations, she says. SQL Server database administrators, mainframe pros for year 2000 projects and networking support people remain in high demand.

TUCSON

"Tucson offers IS professionals big employers, a lower cost of living and more of a college-town atmosphere," says Jay Lash, division manager of Manpower Technical in Arizona. "The biggest attraction to the area is weather and lifestyle."

Most firms here permit business casual dress year-round and flextime.

The demand for IT talent in Tucson is similar to that in Phoenix. Companies want software engineers, developers, programmers, technicians, computer network support people and Internet experts. "New technology such as Oracle and PowerBuilder are sought as often as old mainframe skills for tear 2000 projects," Lash says. □

Vitiello is a freelance writer in East Brunswick, N.J.

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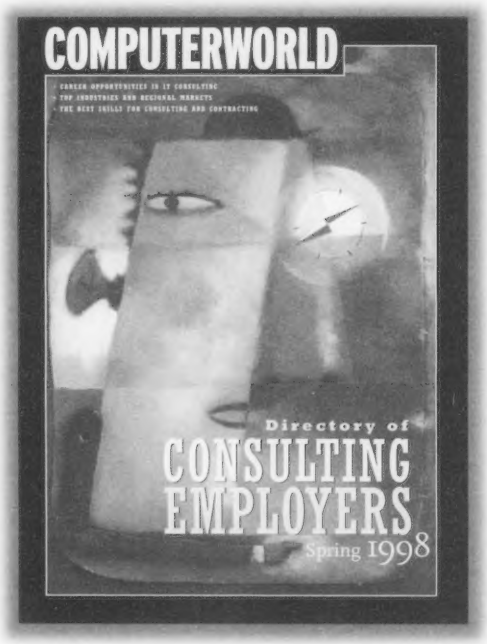

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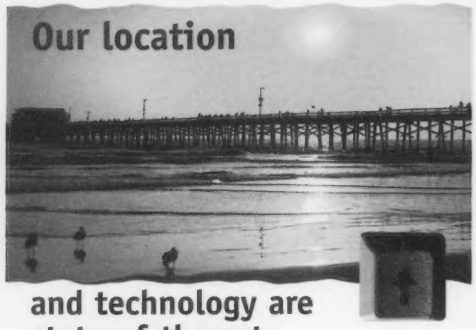

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Software Engineer: Monday through Friday; 8:00 a.m. to 5:00 p.m.; 40 hours per week; $58,707 annually. Required is a Master of Science degree in Electrical Engineering or Computer Science and one (1) year of experience in the position being offered (i.e., Software Engineer) **OR** one (1) year of experience as a Graduate Research Assistant or Engineer. As part of the required experience in the position being offered or in the related occupation, the applicant must have had experience in software development in a UNIX and/or windows environment and in User Interface design (either on UNIX using Motif or on Windows); had experience with pattern recognition and image processing techniques and analysis for medical imaging, and had programming experience in C/C++ and Object Oriented design and analysis. Designs, develops and tests sophisticated software systems for the company's proprietary line of computed tomography (CT) medical systems. Develops workstation software spanning image processing and reconstruction, display, User Interface, user applications and other process software for the CT/i product. Conducts new feature development, research site support, product evolution and SPR resolution. Works with cross-functional team and clinical sites to define and research new applications and build them based on this research. Drives six sigma quality initiatives and activities in CT software development. Covers all phases of the software development life cycle, including User Interface, network communications with other software and with the overall software system. Develops standards and techniques to be used for development of other software features within the CT/i environment for improved and optimized design. Interested applicants submit two (2) resumes to: DWE-ALC, c/o: Mike Brooks/Gerald Gulseth, P.O. Box 7972, Madison, WI 53707-7972. Case #C100575. **AN EMPLOYER PAID AD**

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Performs detailed analysis, development and testing, and debugging of J.D. Edwards OneWorld business applications utilizing J.D. Edwards client/server CASE tools and Microsoft Visual C++ in an enterprise open systems environment. The qualified candidate will possess 1-3 years' business application development, preferably with J.D. Edwards OneWorld, in one of the following areas: Financials, Manufacturing and Distribution, or Customer Service and Sales Order Management. A BS degree or equivalent experience is required. Experience in an enterprise client/server environment using Windows NT Server, IBM AS/400, Microsoft SQL Server, and distributed databases is highly desirable. Prior experience with J.D. Edwards OneWorld application architecture and CASE tools is also highly desirable. Some experience with Microsoft Visual C++ preferred.

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Performs integration of third party and custom developed business applications into a J.D. Edwards OneWorld enterprise client/server environment. Develops applications for data conversion, inter-application communication using OneWorld API's, data warehouse extracts, and other interfaces to non-J.D. Edwards systems. A BS degree or equivalent experience is required. Experience in an enterprise client/server environment using Microsoft Visual C++, Windows NT Server, IBM AS/400, Microsoft SQL Server, and distributed systems is highly desirable. Experience with application interfacing, API's and middleware concepts is required. Prior experience with J.D. Edwards OneWorld application architecture and CASE tools is also highly desirable.

APPLICATION DEVELOPER

Performs detailed analysis, development and testing, and debugging of business applications utilizing 4GI tools such as Microsoft Visual Basic or Powerbuilder, and Microsoft Visual C++ in an enterprise open systems environment. The qualified candidate will possess 1-3 years' business application development in one of the following areas: Financials, Manufacturing and Distribution, or Customer Service and Sales Order Management. A BS degree or equivalent experience is required. Experience in an enterprise client/server environment using Microsoft Visual Basic, Visual C++, Windows NT Server, AS/400, Microsoft SQL Server, and distributed systems is highly desirable. Experience with Microsoft Visual C++ is required.

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Senior Business Analyst- BIG 6 EXPERIENCE, tired of traveling? Report directly to the CIO! Perform feasibility studies cost/benefits analysis on key corporate initiatives. Knowledge of life cycle development, Data/process modeling, and business re-engineering experience required. Additionally, net present value (NPV) calculations and equivalent annual annuity (EAA) calculations experience also required.

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Telecommunications Analyst- Manage all voice communication equipment, perform in-depth analysis capacity planning of inbound/outbound voice/data of the Nortel SL-1 PBX switch, Meridian Mail and ACD queues.

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Software Engineer: Monday through Friday; 8:00 a.m. to 5:00 p.m.; 40 hours per week; $58,707 annually. Required is a Master of Science degree in Computer Science, Computer Engineering or Electrical Engineering and one (1) year of experience in the position being offered (i.e., Software Engineer) **OR** one (1) year of experience as a Graduate Research Assistant or Computer Engineer. As part of the required experience in the position being offered or in the related occupation, the applicant must have had experience in developing software in install/integration area and in integrating large-scale software systems; had experience with C/C++, Born shell scripts and Perl; had experience in UNIX system administration and network administration. Develops and maintains a wide variety of software applications and tools in the install/integration area, including documentation, review, feature development and testing for global manufacturer of advanced medical diagnostic equipment. Provides technical leadership and consulting to software engineers. Installs and integrates software and hardware for CT (Computed Tomography) systems. Provides technical support and troubleshooting for CT systems. Provides technical assistance and support on feature development with outside companies. Supports software build process and system administration. Supports and resolves post-release problems and issues for CT systems. Serves as a mentor by assisting new employees to learn and contribute in a short period of time. Serves as a process champion by motivating, coordinating, and implementing company initiatives such as new employee functioning training and team productivity. Serves as a deputy software team leader as required to provide software-related leadership and coordination efforts. Interested applicants submit two (2) resumes to: DWE-ALC, c/o: Mike Brooks/Gerald Gulseth, P.O. Box 7972, Madison, WI 53707-7972, Case #C100574. **AN EMPLOYER PAID AD**

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We are HCR ManorCare! Two of the nation's premier long-term care companies have recently combined to form HCR ManorCare. As a result, we are seeking several Computer/IS professionals interested in joining our dynamic team at our Corporate Offices in Toledo.

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Senior Software Engineer: Lisle, IL. As a team leader, design, dvlp & maintain software that interfaces between customer sites & in-house back office order processing utilizing C, C++, Sybase, Sybase Open Client Library & Microsoft SQL*Server. Delegate responsibility for dvlpmt & maintenance tasks. Provide technical guidance & training to team members. Act as primary customer interface to access user requirements, troubleshoot & evaluate the need for new features. Dvlp recommendations for new software features. Direct definition of business needs & formulation of system scope & objectives. Manage project work flow & plan. Serve as resource to mgmt, project teams & customers. Provide technical support on the Sequel to Platinum accounting software. Master's in Comp Sci or Mgmt Info Systems req'd + 2 yrs exp in job offered or 2 yrs as Software Engr. Exp. must incl dvlpmt of order processing software utilizing C++, Sybase & SQL*Server. $66,000/yr; 8:30am-5:15pm. Send 2 copies of both resume & cover letter to Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605. Att: Lydia Clarke; Ref. # V-IL 19753-E. No Calls. Applicants must have proof of legal authority to work permanently in the US. An employer paid ad.

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Information Systems Technologies, Inc. is a quality, systems, and process improvement consulting company. Our people are our only asset. We handle multiple projects in fast-paced manufacturing and automotive environments. Our employees have direct contact with customers and have a direct impact on the customer's business.

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Systems Engineer, 40hrs/wk. Design, analyze, develop and implement Lotus Notes applications for groupware management. Analyze workflow applications, identify problems, evaluate effectiveness and develop new systems that are year 2000 compliant. Re-engineer workflow process by automating and webserver enabling using Lotus Notes, Lotus Script, C/C++, Domino, Microsoft Visual Basic, Exchange, and JAVA. Requires BS in computer science or systems engineering and 1 year experience in the job offered. Direct experience does not need to be in developing systems for year 2000 compliant. Send resume & cover letter (no calls) to Leah Blackwell, Blackwell Consulting Services, 100 S. Wacker Dr., Suite 200, Chicago, IL 60606

Systems Analyst: Chicago, IL and other client locations. Analyze, design, develop, implement, enhance, modify, test and debug applications in an IBM mainframe environment using IBM mainframe management and productivity tools, CICS, DB2 and COBOL. Reqd. Bachelor's degree in Comp. Sc., Comp. Engg. & 3 yrs. of exp in the job duties or in comp. software development (e.g. programmer, programmer analyst, systems analyst, software engg., consultant, or equivalent). 2 yrs. of the exp. must be with COBOL, CICS, DB2 and IBM mainframe management and productivity tools. The exp. may be concurrent. M-F 8:30am-5:30pm, 40hrs/wk, $56,000/yr. Must have proof of legal authority to work permanently in the U.S. Send resume in duplicate to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street-7 North, Chicago, IL 60605. Attention: Bert Grunnet. Reference #V-IL 20160-P. AN EMPLOYER PAID AD. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

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We are HCR ManorCare! Two of the nation's premier long-term care companies have recently combined to form HCR ManorCare. As a result, we are seeking several IS professionals interested in joining our dynamic team at our Corporate Offices in Toledo.

These individuals will provide high quality software solutions to HCR ManorCare business units, assist in the selection of purchased applications, integrate third party applications, and build and maintain propriety applications.

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Consultant (Systems Analyst): Designs, develops, modifies, tests, and implements various software systems installed as part of an existing real time warehouse software package installed on an AS 400 mid-range computer installed at client sites. Uses SYNON/2E lower CASE tools as well as various upper CASE tools to develop proper functionality of such software package including modification of such systems to meet end user's information requirements. Uses software engineering and information engineering principles developed through implementation of such systems using SYNON/2E and other CASE tools to determine informational needs of clients and make recommendations to modify systems in accordance with such needs. Uses RPG programming language in performance of all duties to control codes in lower level programs. Requires B.S. degree in Electrical Engineering or Computer Science. Also requires two years experience in the job to be performed or two years experience as a Programmer or Programmer/Analyst. Experience in related field must include performance of all duties specified in job offered. Hours: 9:00 a.m.- 5:00 p.m. 40 hours per week at $55,000.00 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send two copies of resume and cover letter to: Illinois Department of Employment Security, 401 S.State Street - 7 North, Chicago, IL 60605, Attention: Len Boksa, Reference #V-IL 19906-B, AN EMPLOYER PAID AD. NO CALLS.

Consultant needed for computer software development and consulting firm located in Oak Brook, Illinois. Job duties include: Analyze, plan, design, code, test and document computer programs. Identify, evaluate and define user requirements for new or modified programs to determine cost and effort required for development. Consult with users to identify process flows, user documentation and technical reports. Prepare data models, process flow diagrams, functional decomposition charts and prototypes to illustrate program flows. Use Visual Basic, C, Visual C++, SQL, and Windows NT. Applicant must have B.S. degree in Computer Science. Applicant must also have 2 yrs. exp. in the job duties described above or as a programmer analyst, consultant or software engineer which includes 2 yrs. analyzing and designing computer programs with 1 yr. of Visual Basic and Visual C++. 40hrs/wk, 8:00 am - 5:00 pm, Mon-Fri, $57,449.60/yr. Send 2 copies of both resume & cover letter (NO CALLS) to: Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, Illinois 60605, ATTN: Joanne Breaux, Ref# V-IL 19129-N. Must have proof of legal authority to work permanently in the U.S. AN EMPLOYER PAID AD.

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Systems Support Mgr. (Chicago, IL) - For all N. Amer. offices, direct end-user support for desktop/laptop h/ware & s/ware environ including s/ware installation, h/ware s/ware troubleshooting, training, network admin., & s/ware h/ware acquisition. Manage support group of 12. Duties entail work w/Win 95, Win NT, Microsoft Office, Novell Netware, Lotus Notes, & troubleshooting of PC h/ware problems. Req: MBA or MA in Comp Engg, Comp Sci, or MIS & 2 yrs exp. in job offered or 2 yrs. exp in related occup of Sys Analyst, Info Support Specialist, MIS Intern, or Research Asst OR alt req of BA in Comp Sci, Comp Engg, or MIS & 5 yrs progressively responsible exp. in the job offered or above related occups. Exp. must involve End User Support, Win 95, Win NT, Microsoft Office, Novell Netware, Lotus Notes, & troubleshooting PC h/ware problems. $60,000/yr; 40 hrs/wk; 9:00-5:00; overtime: N/A. Must have proof of legal authority to work permanently in the US. Mail 2 copies of resume & cover letter to: ILLINOIS DEPT. OF EMPLOYMENT SECURITY, 401 S. State St.-7 N., Chicago, IL 60605, Attn: Janet Aschenbrenner; Ref#V-IL 19414-A, AN EMPLOYER PAID AD; NO CALLS.

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BIOS ENGINEER to design and develop IBM PC compatible system BIOS using Intel 80x86 Assembly language; Develop the BIOS for different Motherboard chipsets, initialize memory controllers, cache controllers, ISA, EIO, PCI, USB bus controllers and I/O controllers; Determine algorithms for auto memory sizing and cache sizing; Develop mobile BIOS, Green PC functionality, power management and APM; Determine algorithm of PnP devices identification, initialization and reconfiguration; Develop PC peripheral devices system level software support; Work with customer for customization of BIOS as per OEM requirements, including different BIOS Setup features; Work on debugging, testing of each module of BIOS, compatibility testing and bug fixing using various software debuggers, In-circuit Emulators and EPROM simulators; Utilize object-oriented programming techniques, and C/C++ or Pascal under DOS and Windows operating systems. Require: B.S. degree in Computer Engineering with two years of experience in the job offered or in the related occupation of Computer Engineer. Salary: $52,000 per year, 9 am to 6 pm, M-F. Send resume to: Georgia Department of Labor, Job Order # GA 6300048, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

Programmer Analyst needed for software development and consulting firm located in Duluth, Georgia. Job duties include: analyze, design, and develop software applications. Consult on various in-house projects and/or contract basis throughout the U.S. Use Oracle, Developer/2000, SQL*FORMS, PRO*C, SQL*PLUS, SQL*MENU, PL/SQL, SQL*Reportwriter in Windows and Unix environment. Applicant must have a B.S. in computer science or computer engineering and 2 yrs. exp. in job duties described above or 2 yrs. exp. as a Programmer Analyst, Consultant or Software Engineer to include 2 yrs. designing and developing software applications using Oracle, SQL, PRO*C, Unix and Developer/2000 in Windows environment. 40hrs/wk, 8am-5pm, $52,997/yr. Send 2 resumes to Georgia Dept. of Labor, Job Order #GA 6302567, 1535 Atkinson Rd., Lawrenceville, GA 30043-5601 or the nearest Department of Labor Field Service Office.

Software Eng. II. MSCS + 6 mo. program. exp. Design & code in C, C++ & visual basic languages. Design & dev software for loan process sys, credit report & communication on Windows 95, Windows NT, Windows 3.1 operating sys.; eval. interface re: setup, implement. & configuration utilizing Microsoft Visual C++, MFC, DDE, C-tree, T-tree, Assembler, INETCO; Windbatch, Winport software. Doc. Knowledge: writing in C & conversion software from DOS to 16 bit Windows & between proprietary mainframe formats; dev. interprocess communication apps thru TCPIP & dialogic software & hardware. $42,944/yr. Send resume: Marilyn Hall, HR Mgr, Life Investors Ins. Co. of America, 1100 Johnson Fry Rd, Suite 300, Atlanta GA 30342.

DATABASE ADMINISTRATOR wanted by IS/IT Co. in Piscataway, NJ. Must have 1½ yr exp in computer s/ware dvlpmt and/or d/base admin. Masters in Comp Sci, Comp Engg or Comp Sci Engg required. Respond to: HR Dept, IVth Generation Inc, 255 Old New Brunswick Rd, Ste S240, Piscataway, NJ 08854.

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Deadline for applications: Dec.14. Detailed curriculum vitae including date of birth and nationality should be sent to: **98-D-JSP-B14-NY/CXM, Staffing Support Section, Office of Human Resources Management, Room 2475C, United Nations, New York, NY 10017, Fax No: (212) 963-3134, E-mail Address: Staffing@un.org**

Due to the volume of applications, all internal candidates and only those external candidates under serious consideration will be acknowledged.

Programmer Analyst needed for software development and consulting firm located in Duluth, Georgia. Job duties include: analyze, design, and develop software applications. Consult on various in-house projects and/or contract basis throughout the U.S. Use COBOL II, MVS/JCL, DB2, IMS database, VSAM database, VS/CICS, Intertest, Xpeditor, Job-Scheduler, & FILE-AID on IBM mainframe in MVS/XA/ESA environment. Applicant must have a B.S. in Computer Science or Engineering and 1 yr. exp. in job duties described above or 1 yr. as a Programmer, Programmer Analyst, or Engineer to include 1 yr. designing and developing software applications with COBOL II, MVS/JCL, DB2 and VS/CICS. 40hrs/wk, 8am-5pm, $52,997/yr. Send 2 resumes to Georgia Dept. of Labor, Job Order #GA 6302500, 1535 Atkinson Rd., Lawrenceville, GA 30043-5601 or the nearest Department of Labor Field Service Office.

Software Engineer - Design, develop, & implement software within a large project using C++ and object-oriented design methodologies following the architectural guidelines and coding standards. Responsibilities include detailed analysis of tasks, reviewing technical documentation, implementing and testing designs independently, resolving bugs and performing all tasks related to the development environment. Requirements include Bachelor's Degree or equivalent in Computer Science or Engineering, with at least three years of experience in job offered or in software application development. Thorough knowledge of C++, Object Oriented Design and Development. Applicants must have unrestricted authorization to work in the United States. Salary $70,000/year. 40 hours/wk. Respond with two copies of resume to Case #80087, P.O. Box 8968, Boston, MA 02114.

Programmer Analyst needed F/T by Multinational Co. in New York City. Must have BS in Comp Sci, Math or Engg. Respond to: HR Dept, Yamada International Corp, 399 Park Ave, 38th Flr, New York, NY 10022.

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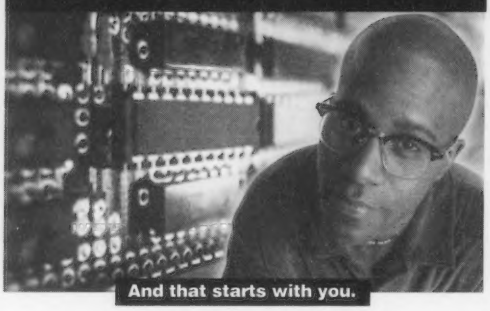

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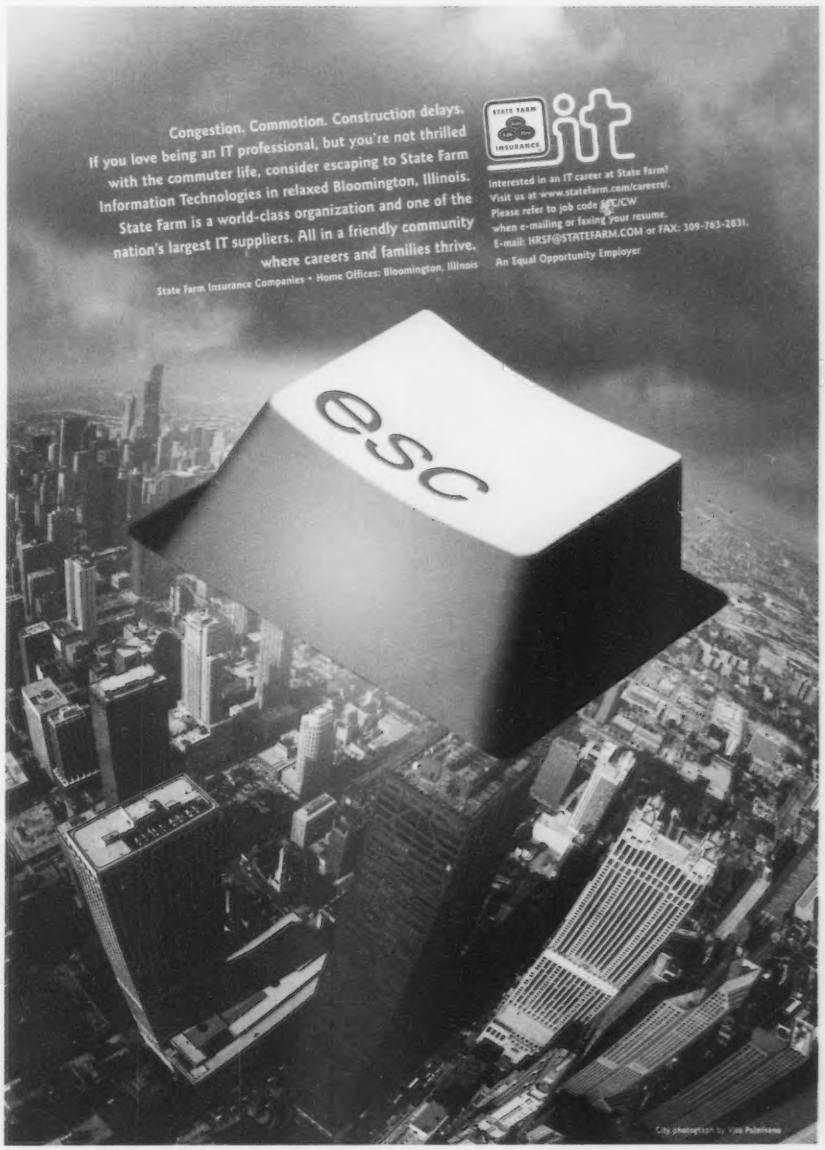

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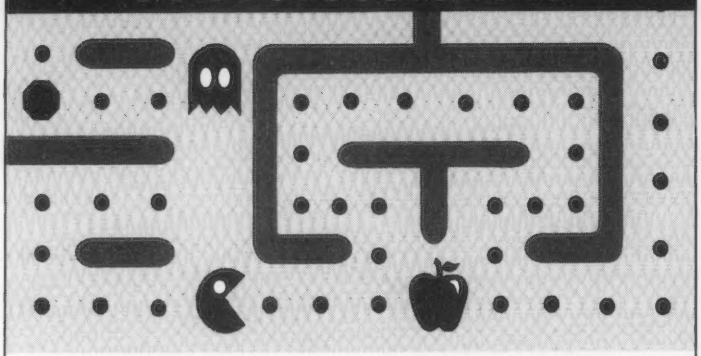

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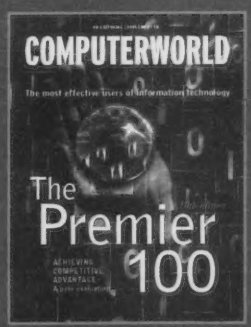
10th Anniversary Computerworld Premier 100

Read About 1998's Best and Brightest Business Applications of Technology



Premier 100 honors smartest users of technology

Computerworld is honoring the most effective uses of IT in this year's Premier 100. For the 10th anniversary we're doing something a little differently and basing our results on peer evaluations. One thousand IT managers of Fortune 1,000 companies nominated their peers based on superior customer service, rapid revenue growth and reduced cycle times.

Is your IT organization on the list? Read the Computerworld Premier 100 in this issue of *Computerworld*.

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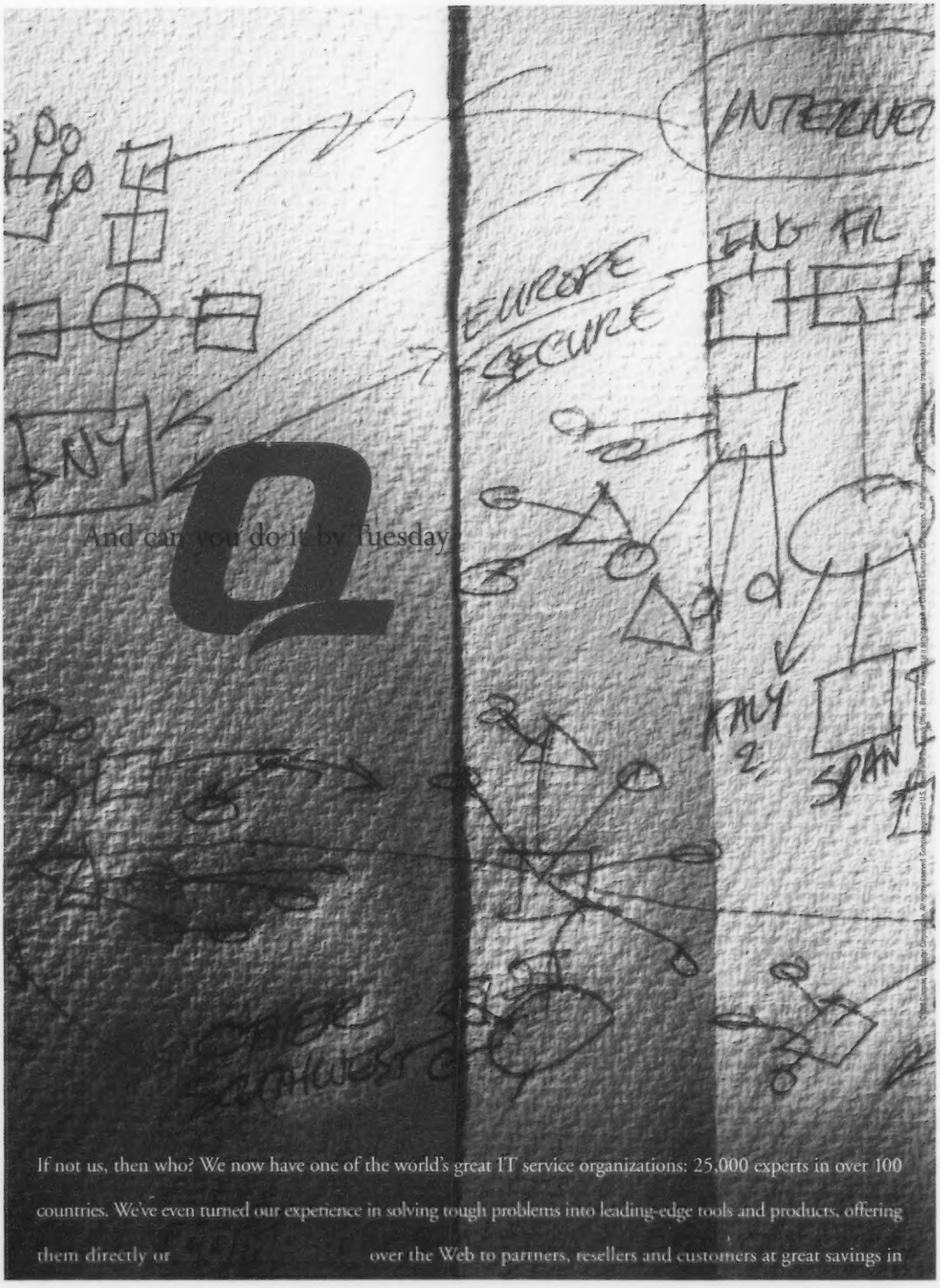

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The Week in Stocks

Gainers

PERCENT

Tricord Systems	135.7
Cybercash, Inc.	25.0
Excite, Inc. (H)	23.7
Sequent Computer Systems	22.8
Westell Technology Inc.	20.4
Texas Micro	18.8
Cadence Design Systems	17.0
The Vantive Corp.	15.4

DOLLAR

Yahoo! Inc. (H)	15.75
Excite, Inc. (H)	9.59
Intel Corp. (H)	9.56
Intuit	6.63
IBM (H)	6.56
Linear Technology	6.13
Texas Instruments (H)	5.31
Dieboid Inc.	4.50

Losers

PERCENT

Aspen Technology Inc.	-26.2
Security Dynamics Technologies Inc.	-20.5
Security Dynamics	-20.5
Iomega	-15.5
Storage Technology	-14.7
Gartner Group	-14.6
Legato Systems Inc.	-14.2
Computer Horizons Corp.	-13.8

DOLLAR

Legato Systems Inc.	-6.75
Lucent Technologies	-6.25
Gateway 2000 Inc.	-6.13
Hitachi Ltd.	-5.63
Storage Technology	-5.38
Aspen Technology Inc.	-4.97
Veritas Software Corp.	-4.47
Sony	-3.94

INDUSTRY ALMANAC

Book retailers face off

Last week's $600 million deal for Barnes & Noble Inc. (Nasdaq:BKS) to buy Ingram Book Group, a private book wholesaler, could be considered a big trump in the online booksellers market. But the real winner may be Charlotte, N.C.-based Baker & Taylor Books, the privately held No. 2 book distributor.

The company supplies books, calendars and related items to more than 100,000 outlets worldwide. That makes it a possible acquisition target by online bookseller Amazon.com Inc. (Nasdaq:AMZN) and others, analysts say.

The Barnes & Noble/Ingram merger could prove troublesome for Amazon.com, which last year got 60% of its books from Ingram. But not for Borders Group Inc. (Nasdaq:BGP), which has a well-established distribution system in-house.

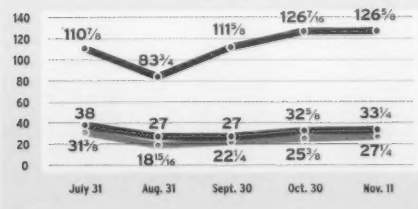
And if books do go first to Barnes & Noble, other book retailers may not stick with Ingram, says Jason Klein, an equity analyst at Blackford Securities in Garden City, N.Y. "Everyone will turn to [Baker & Taylor] in the long run," Klein says.

Lise Buyer, an analyst at CS First Boston Corp., agrees. Any time-to-market advantages for Barnes & Noble could be short-lived, she says, as major publishing groups look to other third-party suppliers. Buyer says the transaction, if approved by federal regulators, could increase the short-term risk associated with investing in Amazon.com. But the brokerage's long-term outlook for Amazon.com is favorable. It rates the stock as a Buy.

Klein says Blackford has a Weak Buy rating on Barnes & Noble. "For $600 million, they got 11 distribution points, but it's still unclear what they're getting above and beyond that," he says. — Roberta Fusaro

BOOK MARKS

Analysts say Barnes & Noble's Nov. 6 purchase of Ingram Book Group should boost its short-term outlook



Exch.	52-Week		Range	Nov. 13 2PM	Wk Net Change	Wk Pct Change
Software					**OFF -2.6%**	
ADBE	51.87	23.62	Adobe Systems Inc.	44.38	2.50	6.0
AZPN	56.87	6.12	Aspen Technology Inc.	13.97	-4.97	-26.2
ADSK	50.06	21.62	Autodesk Inc.	35.00	-2.44	-6.5
AVID	47.75	11.06	Avid Technology	25.00	-0.75	-2.9
BOOL	32.25	16.00	Bindle & Babbage Inc.	30.63	-0.94	-3.0
CDN	39.00	19.12	Cadence Design Systems	29.25	4.25	17.0
CBTSY	63.87	6.68	CBT Group Plc.	11.72	-0.66	-5.3
CHKPF	50.50	10.87	Checkpoint Software	28.06	1.44	5.4
CTXS	77.38	36.37	Citrix Systems Inc.	77.38	2.00	2.7
COGNF	30.50	14.75	Cognos Inc.	17.56	-2.69	-13.3
CA	61.93	26.00	Computer Associates	44.84	2.72	6.5
CPWR	63.00	27.62	Compuware Corp.	56.13	-2.81	-4.8
DCTM	59.62	16.75	Documentum	38.50	-1.56	-3.9
EFII	51.50	12.87	Electronics For Imaging	28.31	-0.44	-1.5
HNCS	47.12	22.50	Hnc Software	31.50	-0.94	-2.9
IDXC	55.75	28.37	IDX Systems	42.75	3.13	7.9
IFMX	10.43	3.50	Informix Software Inc.	5.78	-0.56	-8.9
INTU	67.93	28.25	Intuit	55.63	6.63	13.5
JKHY	50.75	24.00	Jack Henry Aso	48.63	-0.75	-1.5
LGTO	56.18	16.00	Legato Systems Inc.	40.63	-6.75	-14.2
MACR	25.81	7.12	Macromedia Inc. (H)	24.00	-1.09	-4.4
MANU	66.37	6.12	Manugistics Group Inc.	14.75	0.44	3.1
MENT	11.31	5.43	Mentor Graphics	8.25	-1.00	-10.8
MSFT	119.62	59.00	Microsoft Corp.	109.63	0.75	0.7
NETA	56.87	25.50	Network Associates	44.44	-1.63	-3.5
GMH	57.87	30.37	Network General	40.13	-1.56	-3.7
NOVL	15.37	6.81	Novell Inc.	14.31	-0.19	-1.3
ORCL	36.12	17.75	Oracle Corp.	32.84	1.41	4.5
PMTC	36.31	8.50	Parametric Technology Corp.	14.63	-2.13	-12.7
PSFT	57.43	18.37	Peoplesoft Inc.	21.13	-1.88	-8.2
PIXR	66.00	19.50	Pixar	45.38	-3.09	-6.4
PLAT	34.31	9.00	Platinum Technology Inc.	17.75	-0.44	-2.4
RATL	25.12	8.87	Rational Software Corp. (H)	23.00	-1.38	-5.6
SCUR	17.62	6.37	Secure Computing Corp. (H)	16.94	1.38	8.8
SDTI	42.75	5.43	Security Dynamics	10.88	-2.81	-20.5
SE	50.25	20.12	Sterling Commerce Inc.	34.75	-1.13	-3.1
SSW	32.81	16.75	Sterling Software Inc.	25.44	-0.75	-2.9
SDRC	29.00	7.50	Structural Dynamics Research	17.50	1.00	6.1
SYBS	16.43	4.50	Sybase Inc.	6.38	-0.50	-7.3
SYMC	32.62	8.68	Symantec Corp.	16.94	-0.44	-2.5
SNPS	47.18	24.50	Synopsis (H)	46.88	0.44	0.9
SCTC	30.87	8.50	Systems & Computer Technology	17.50	-1.50	-7.9
BAANF	55.50	9.50	The Baan Co. N.V.	13.56	-1.00	-6.9
VNTV	39.75	5.00	The Vantive Corp.	9.63	1.28	15.4
TSAI	43.50	27.06	Trans. Sys. Arch.	37.50	-0.44	-1.2
VRTS	60.25	23.75	Veritas Software Corp.	50.22	-4.47	-8.2
WIND	51.62	28.00	Wind River Systems Inc.	44.00	-2.00	-4.3
Telecommunications Carriers					**OFF -1.5%**	
ATI	65.62	37.06	Airtouch Communications	52.75	-3.88	-6.8
AT	50.18	36.06	Alltel Corp. (H)	49.75	1.19	2.4
AIT	54.93	34.62	Ameritech Corp.	52.63	-0.56	-1.1
ANDW	30.06	10.37	Andrew Corp.	17.50	-0.56	-3.1
T	68.50	46.50	AT&T	61.69	-2.00	-3.1
BCE	46.62	23.62	BCE Inc.	33.63	-1.44	-4.1
BEL	56.43	40.43	Bell Atlantic (H)	53.81	-1.69	-3.0
BLS	82.75	48.50	Bell South	79.50	0.13	0.2
CSN	38.62	20.87	Cincinnati Bell Inc.	28.75	1.00	3.6
CMCSK	51.62	23.87	Comcast	47.63	2.13	4.7
CQ	42.75	21.62	Comsat Corp.	38.25	-0.38	-1.0
COX	61.50	31.18	Cox Communications Inc.	54.81	1.75	3.3
CSTRF	37.12	8.31	Globalstar Telecom. Ltd.	16.25	-0.75	-4.4
GTE	64.37	44.62	GTE Corp.	59.44	-2.69	-4.3
NXTL	34.12	15.37	Nextel Communications	22.31	-0.44	-1.9
SPOT	66.12	26.50	Panamsat	38.25	-0.63	-1.6
QCOM	70.37	37.75	Qualcomm	54.88	-2.25	-3.9
SBC	48.62	33.18	Sbc Communications	47.06	-0.88	-1.8
FON	80.12	53.75	Sprint Corp.	78.19	-1.06	-1.3
TCOMA	44.56	22.00	Tele-Communications	39.69	-2.38	-5.6
TDS	50.12	30.62	Telephone And Data Systems	40.13	-0.13	-0.3
USW	59.62	41.37	US West (H)	57.38	-1.06	-1.8
VIA	69.37	30.87	Viacom	63.94	2.75	4.5
WCII	48.12	10.25	Winstar Communications Inc.	29.63	-2.00	-6.3
WCOM	57.87	28.50	Worldcom Inc.	55.50	0.13	0.2
Services					**OFF -2.7%**	
ACXM	28.25	15.37	Acxiom Corp.	25.50	-1.31	-4.9
AFA	39.75	21.50	Affiliated Computer Servs	38.25	1.63	4.4
AMSY	34.50	18.75	American Mgt. Systems	31.06	-0.72	-2.3
AUD	84.31	54.06	Automatic Data Processing	79.31	-2.81	-3.4
BSYS	49.62	30.00	Bisys Group, Inc. (H)	48.88	0.56	1.2
CATP	58.37	13.37	Cambridge Technology Ptnrs	21.25	0.13	0.6
CEN	64.50	41.87	Ceridian	57.50	1.63	2.9
CBR	40.87	13.31	Ciber Inc.	21.19	-1.69	-7.4
CDO	23.25	12.43	Comdisco	18.94	1.63	9.4
CMRZ	53.50	17.25	Computer Horizons Corp.	23.50	-3.75	-13.8
CSC	74.87	35.25	Computer Sciences	52.06	-2.56	-4.7
DST	70.56	34.00	Dst Systems Inc.	49.69	-2.94	-5.6
EDS	50.87	30.43	Electronic Data Systems	39.88	-1.25	-3.0
FDC	36.06	19.68	First Data Group	26.16	0.91	3.6
FISV	49.37	28.37	Fiserv	44.63	-1.25	-6.8
IT	41.75	17.31	Gartner Group	20.50	-3.50	-14.6
HBOC	38.37	19.31	HBO & Co.	22.75	-2.44	-9.7
KEA	60.93	24.75	Keane	35.25	-2.00	-5.4
NDC	46.00	26.18	National Data	33.94	-1.44	-4.1
PAYX	53.38	24.81	Paychex, Inc. (H)	53.38	1.63	3.1
REGI	31.75	6.62	Renaissance Worldwide (L)	7.81	-0.69	-8.1
REY	24.00	12.62	Reynolds & Reynolds	20.28	0.78	4.0
SFE	45.37	17.12	Safeguard Scientifics	29.13	-0.13	-0.4
SAPE	62.00	24.25	Sapient Corp.	44.00	-3.00	-6.4
SMS	86.50	40.06	Shared Medical Systems	47.75	0.69	1.5
SDS	40.00	21.68	Sungard Data Systems	31.25	-1.50	-4.6
SYNT	32.62	8.68	Syntel Inc.	16.94	-0.44	-2.5
TECD	53.12	33.75	Tech Data	39.78	-2.22	-5.3
TSS	23.93	12.18	Total System Services, Inc.	20.75	0.25	1.2
TSAI	43.50	27.06	Transaction Sys. Architects	37.50	-0.44	-1.2
Network					**UP 0.3%**	
COMS	39.12	22.93	3Com Corp.	34.88	-0.44	-1.2
ADCT	43.62	15.75	ADC Telecommunications Inc.	27.75	2.75	11.0
ANTC	25.00	10.37	Antec	18.56	1.31	7.6
ASND	55.06	22.00	Ascend Communications Inc.	53.06	2.00	3.9
BNYN	13.37	2.12	Bantan Systems Inc.	5.25	0.50	10.5
CS	28.68	6.62	Cabletron Systems	11.69	-1.00	-7.9
CNEBF	20.00	6.28	Cal.Net Enterprises	6.28	-0.97	-13.4
CSCO	70.25	31.87	Cisco Systems Inc.	65.38	2.19	3.2
ECILF	38.68	19.75	ECI Telecom	32.38	-1.75	-5.1
FORE	28.00	9.25	Fore Systems Inc.	14.44	-1.75	-10.8
HRS	55.31	27.56	Harris Corp.	37.81	0.31	0.8
GMH	57.87	30.37	Hughes Electronics/GM	40.13	-1.56	-3.7
ERICY	34.00	15.00	LM Ericsson	23.00	-0.19	-0.8
LU	108.50	36.18	Lucent Technologies	83.50	-6.25	-7.0
MADGF	7.75	1.75	Madge Networks	4.50	0.50	12.5
NCDI	13.75	4.37	Network Computing Dev	8.00	0.63	8.5
NWK	20.62	8.00	Network Equipment Tech.	11.31	+2.31	2.8
NN	48.75	15.43	Newbridge Networks	21.63	-1.56	-6.7

Exch.	52-Week		Range	Nov. 13 2PM	Wk Net Change	Wk Pct Change
NOK.A	94.37	31.62	Nokia Corp.	90.25	0.31	0.3
NT	69.25	26.81	Northern Telecom Ltd.	44.44	0.19	0.4
PAIR	25.25	6.00	Pairgain Technologies Inc.	10.00	-0.94	-8.6
PCTL	11.93	4.75	Picturetel	7.06	-0.13	1.7
SFA	27.93	11.75	Scientific Atlanta	17.31	0.50	3.0
SHVA	14.37	2.75	Shiva	5.66	0.00	0.0
TLAB	93.12	31.37	Tellabs Inc.	56.75	-2.75	-4.6
USW	59.62	41.37	US West (H)	57.38	-1.06	-1.8
VRLK	11.18	2.87	Verilink	4.38	-0.25	-5.4
WSTL	21.75	2.75	Westell Technology Inc.	7.00	1.19	20.4
XYLN	31.31	9.62	Xylan	18.38	1.31	7.7
Semiconductors, Chips & Equipment					**UP 4.9%**	
ADPT	51.25	7.87	Adaptec	16.19	-0.69	-4.1
AMD	31.00	9.31	Advanced Micro Devices	27.50	3.50	14.6
ALTR	52.25	28.25	Altera	49.38	3.19	6.9
ADI	39.62	12.00	Analog Devices	21.94	2.38	11.0
AMAT	39.59	21.56	Applied Materials	38.31	2.13	5.9
ASMLF	49.06	12.93	ASM Lithography Holding	27.81	2.00	7.7
HRS	55.31	27.56	Harris Corp.	37.81	0.31	0.8
INTC	105.06	65.65	Intel Corp. (H)	104.75	9.56	10.0
KLAC	48.50	20.75	Kla Instruments	37.38	1.81	5.1
LLTC	81.37	39.12	Linear Technology	69.63	6.13	9.6
LSI	29.37	10.50	LSI Logic	16.81	0.31	1.9
MXIM	42.00	22.31	Maxim Integrated Products	40.06	2.06	5.4
MU	48.00	20.06	Micron Technology (H)	45.00	2.38	5.6
MOT	67.68	38.37	Motorola	55.06	0.56	1.0
NSM	36.31	7.43	National Semiconductor	14.31	0.69	5.0
STM	91.75	35.87	Scs-Thomson Microelectronics	69.25	4.25	6.5
SLR	63.68	28.87	Solectron Corp. (H)	63.19	0.44	0.7
TER	48.43	15.00	Teradyne	33.69	2.19	6.9
TXN	69.50	39.62	Texas Instruments (H)	69.06	5.31	8.3
UNPH	65.62	31.12	Uniphase	51.38	-1.88	-3.5
VTSS	37.18	15.81	Vitesse Semiconductor Corp.	33.94	-0.69	-2.0
XLNX	51.62	28.50	Xilinx (H)	51.25	2.50	5.1
Computer Systems					**UP 7.9%**	
AAPL	43.75	12.75	Apple Computer Inc.	35.75	-2.13	-5.6
ASPX	12.00	1.62	Auspex Systems	3.38	-0.25	-6.9
CPQ	38.68	22.93	Compaq	33.50	1.75	5.5
DGN	21.31	7.00	Data General	16.63	-1.19	-6.7
DELL	73.50	17.50	Dell Computer Corp. (H)	65.25	-0.38	-0.6
GTW	68.75	25.06	Gateway 2000 Inc.	53.19	-6.13	-10.3
HWP	82.37	47.06	Hewlett-Packard Co.	65.44	2.25	3.6
HIT	84.68	40.18	Hitachi Ltd.	53.25	-5.63	-9.6
IBM	159.87	95.25	IBM (H)	156.25	6.56	4.4
MUEI	24.75	8.43	Micron	22.06	0.56	2.6
MOT	67.68	38.37	Motorola	55.06	0.56	1.0
NATI	36.50	17.50	National Instruments Corp.	28.00	-0.38	-1.3
NCR	38.37	23.50	NCR	35.69	1.44	4.2
NIPNY	61.87	31.00	NEC	39.50	0.50	1.3
PRCM	18.25	3.50	Procom Tech Inc.	8.88	1.00	12.7
SQNT	24.12	5.68	Sequent Computer Systems	12.13	2.25	22.8
SGI	16.50	7.37	Silicon Graph	12.81	1.06	9.0
SNE	97.18	60.25	Sony	66.81	-3.94	-5.6
SUNW	66.50	30.37	Sun Microsystems (H)	59.94	-0.19	-0.3
TEXM	5.50	2.00	Texas Micro	3.56	0.56	18.8
TRCD	1.56	0.37	Tricord Systems	1.03	0.19	115.7
UIS	30.68	11.50	Unisys	27.19	-0.44	-1.6
Internet					**UP 2.9%**	
AMZN	147.00	22.00	Amazon.Com	127.88	2.13	1.7
AOL	149.00	32.00	America Online (H)	140.44	0.94	0.7
ATHM	57.25	18.25	Athome Corp.	48.25	3.63	8.1
CKFR	31.50	5.75	Checkfree	13.06	-2.00	-13.3
CHKPF	50.50	10.87	Checkpoint Software	28.06	1.44	5.4
CYCH	27.75	5.87	Cybercash, Inc.	10.63	2.13	25.0
EDFY	20.87	4.62	Edify Corp.	5.88	-0.75	-11.3
EGRP	35.25	10.00	E-Trade Group Inc.	22.38	-1.00	-4.3
XCIT	56.00	10.00	Excite, Inc. (H)	50.06	9.59	23.7
SEEK	45.00	7.75	Infoseek	32.25	-1.44	-4.3
LCOS	56.62	12.62	Lycos, Inc. (H)	51.19	2.44	5.0
NSCP	44.50	14.87	Netscape Communications	27.56	2.44	9.7
OMKT	29.12	4.25	Open Market, Inc.	7.75	0.25	3.3
OTEXF	23.50	9.25	Open Text Corp.	13.75	-0.63	-4.3
PSIX	21.93	4.25	Psinet	17.38	0.75	4.5
QDEK	2.87	0.25	Quarterdeck Corp.	0.50	0.01	1.3
SDTI	42.75	5.43	Security Dynamics	10.88	-2.81	-20.5
SPYG	19.37	4.06	Spyglass Inc. (H)	16.81	2.00	13.5
YHOO	185.62	21.00	Yahoo! Inc. (H)	168.50	15.75	10.3
Storage & Peripherals					**OFF -2.4%**	
ADPT	51.25	7.87	Adaptec Inc.	16.19	-0.69	-4.1
APCC	44.25	22.12	American Power Conversion	42.94	-0.88	-2.0
CANNY	25.87	17.00	Canon Inc.	22.00	0.13	0.6
DBD	55.31	19.12	Diebold Inc.	35.63	4.50	14.5
EK	88.93	53.31	Eastman Kodak Co.	77.72	-0.34	0.4
EMC	70.37	23.50	EMC (H)	67.31	-1.75	-2.5
IOM	16.75	2.93	Iomega	7.50	-1.38	-15.5
LXK	76.50	30.00	Lexmark International (H)	76.13	1.31	1.8
QNTM	31.81	10.81	Quantum	19.81	-1.38	-6.5
SEG	31.06	16.12	Seagate Technology	29.44	0.44	1.5
STK	51.12	20.12	Storage Technology	31.25	5.38	14.7
TEK	48.18	13.68	Tektronix	20.50	-0.44	-2.1
XRX	116.50	66.18	Xerox	99.44	1.25	1.2

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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TELEPHONE/FAX

Main phone number .....(508) 879-0700
All editors unless otherwise noted below
Main fax number .....(508) 875-8931
24-hour news tip line.....(508) 820-8555

E-MAIL

Our Web address is www.computerworld.com. All staff members can be reached via E-mail on the Internet using the form:
firstname_lastname@cw.com.

All IDG News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:
letters@cw.com.

Include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Phone .....(800) 552-4431
E-mail.....circulation@cw.com
Back Issues.....(508) 820-8167

REPRINTS/PERMISSIONS

Phone.....Ray Trynovich (717) 560-2001, ext. 24
E-mail.....sales@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

Department Editors/News

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Michael Goldberg (508) 620-7789
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Anne McCrory (508) 820-8205
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863
Industry Editor Joe Maglitta (508) 820-8223
West Coast Bureau Chief Galen Gruman (650) 524-7110

National Correspondent

IT services, systems integration, outsourcing Julia King (610) 532-7599

Senior Editors/News

Labor issues, IS careers Barb Cole-Gomolski (760) 728-8858
Network/systems management Cynthia Bournellis (650) 524-7112
Security, network operating systems Sharon Gaudin (508) 820-8122
IS management, year 2000, financial services Thomas Hoffman (914) 988-9630
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Business processes Robert L. Scheier (508) 820-8226
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Client/server software, Unix applications Craig Stedman (508) 820-8120
Midrange hardware, Unix, mainframes Jaikumar Vijayan (508) 820-8220
Internetworking Bob Wallace (508) 820-8214

Senior Writers/News

Databases, data warehousing Stewart Deck (508) 820-8155
E-mail, groupware, document management Roberta Fusaro (508) 620-7776
PCs, servers, network computers, Windows April Jacobs (508) 820-8121
Federal government Patrick Thibodeau (202) 744-8626

Staff Writers/News

New products, multimedia, storage Nancy Dillon (650) 524-7114
Computerworld online Tom Diederich (650) 524-7117
Telecommunications, mobile computing Matt Hamblen (508) 820-8567
Computerworld online Kathleen Ohlson (508) 820-8215
Application development, desktop applications David Orenstein (650) 524-7116

Opinions

Staff Columnist Frank Hayes (503) 252-0100
Columns Editor Galen Gruman (650) 524-7110

Department Editors/Features

Managing Technology reviews/ Review Center Allan E. Alter (508) 620-7714 / James Connolly (508) 820-8144

Senior Editors/Features

Editor at large Gary H. Anthes (202) 347-0134
Features writer Kevin Burden (508) 620-7717
Review Center Cathleen Gagne (508) 620-7729
QuickStudy Stefanie McCann (508) 820-8274
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Managing Rick Saia (508) 820-8118
In Depth Steve Ulfelder (508) 620-7745
IT Careers David B. Weldon (508) 820-8166

Assistant Editor/Features

IT Careers Mari Keefe (508) 628-4906

Research

Laura Hunt, research analyst; Keith Shaw, graphics coordinator.

Copy Desk

Ellen Fanning, managing editor/production (508) 820-8174; Jamie Eckle, assistant managing editor/production; David Ramel, assistant managing editor/special projects; Pat Hyde, senior copy editor; Jean Consilvio, Mary Cresse, Tom Gaudet, Adam Parez, Bob Rawson, copy editors; Jeremy Selwyn, online production coordinator.

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Administrative Support

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178); Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan (650) 524-7111, editorial assistants.

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Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp.....10,12,135
A&I Technologies Inc.....55
Adaptec Inc. 55
Adobe Systems Inc. 6
Advanced Micro Devices Inc.....64
AETEA Information Technology Inc. ..39
Alberta Blue Cross 14
Alltel Call Center Solutions 39
Amazon.com Inc. 4,44,91,131
Amdahl Corp.....16
America Online.....33
American Airlines.....34
American Century Investments.....55
American Institute of Architects 51
American Law Institute.....1
American President Lines Ltd. 135
AMR Corp.....55
Apple Computer Inc. 8,33
Applied Automation Inc. 14
Applied Communications Corp.....91
Aptex Software Inc.....6
Ascend Communications Inc. 10,51
AT&T Corp.....12,16
Autodesk Inc.....27
Automatic Data Processing Corp. 1
AvantGo Inc. 55,135
Baker & Taylor Books 131
BankBoston Corp. 43,136
Barclays Bank PLC 6
Barnes & Noble Inc. 4,131
BEA Systems Inc. 91
Bertelsmann AG.....4
BidCom Inc.....14,51
Blackford Securities.....131
Blue-Line/On-Line Inc.....51
Boole & Babbage Inc.....16
Borders Group Inc.....131
Boundless Technologies Inc. 135
Brigade Solutions Inc.....39
Brightware Inc.....6
BSquare Corp. 135
Business Software Alliance 1
Cable & Wireless LLC.....16
Cabletron Systems Inc. 10
CacheFlow Inc. 91
Callidus Software Inc.....55
Candle Corp. 16
Casio Inc.....51
Central Command Inc. 24,43
Centrix 12
Challenger, Gray & Christmas 107
Chiron Corp. 24
Chrysler Corp. 43,57
Circuit City Stores Inc.....26
Cisco Systems Inc.....10,16,44,138
Citibank 44
Citizens National Bank of Evans City.....39
Citrix Systems Inc. 26
CNF Transportation Co. 24
CNN 43
Coca-Cola Co. 6
Columbia Energy Services Corp. 27
Communications Managers Association 8,16
Compaq Computer Corp.....4,16,67,81,135
Computer Associates International 16,34,55
Computer Crime Consultants Ltd. 6
Computer Science Corp.....4,24,55
Concentra Corp.....12
Concord Communications Inc. 138
Consolidated Freightways Corp.....24
Consumer Financial Services Inc. 10
Continuus Software Corp. 55
Coors Brewing Co. 26
Cromwell Foote Partners LLC.....106
CrossWorlds Software Inc.....91
CS First Boston Corp. 131
Cyrix Corp.....64
Data General Corp. 59
Datascope Corp.....16
Dave & Bairey Communications 91
Delfield Co. 1
Dell Computer Corp. 4,12,44,59,81,82,135
Demo 91
Denman Tire Corp.....59
Desktop Management Task Force.....30
Devonshire Custom Publishing.....107
Digital Equipment Corp. 16
Dollar Bank.....39
Dorenfest & Associates 43
EDventure Holdings Inc.....94
EMC Corp. 55,136
Envision Utility Software Corp. 20
Evergreen Technologies Inc.....64
Evolve Software Inc.....39
Fastcomm Communications Corp. 51
Federal Express Corp.....26
Fidelity Investments.....106
First Union Corp.....27
Foodmaker Inc.....91
Ford Motor Co. 43
Forte Software Inc.....55
Framework Technologies Inc.....51
Frogdesign inc.....138
Frontier Corp.....16
Gateway 4,64,81,82
General Motors Corp. 43
GeoCities.....12
GeoMicro Inc. 55
Georgia-Pacific Corp.....1
Glaxo Wellcome Inc.....20
Global Marine Corp.....91
Goodyear Tire & Rubber Co.....14
Hartford Life Inc. 14
Hasbro Inc. 43
HBO & Co. 39
Herman Goelitz Inc. 97
Hewlett-Packard Co. 33,51,59,64,81,82
HiFive Networks.....16
Hitachi Data Systems 16
Hitachi PC Corp. 62
Hoechst Marion Roussel Inc. 1
Honda 78
HotJob.com.....43
Howrey & Simon.....8
Hummer Winblad 91,94
Hurwitz Group 51
HydraWeb Technologies Inc.....51
Hydro Agri North America.....73
IBM 6,33,43,44,59,67,78,81,135,136
IBM Global Services.....12,24
Icarian Software Inc. 39
Icon Corp. 8
ICT Group.....39
Imation Corp. 55
Inacom Corp.....39
Information Builders Inc.....67
Ingram Book Group 4,131
Inktomi Corp.....91
Inteco Corp.....138
Intel Corp.....8,12,20,26,51,59,64,135
InTelesystems Inc. 16
Intellipost Inc. 39
Intergraph Corp. 59
Interliant Inc. 82
International Paper.....59
International Securities Exchange.....16
International Specialty Products.....27
J. D. Power and Associates.....43
Jackson, Tufts, Cole & Black LLP.....8
Jelly Belly 97
Junglee Corp. 91
Jupiter Communications Inc.....6,39
Kmart Corp. 26
Komatsu Canada Ltd. 26
Korn/Ferry International.....12
Levine, Blaszak, Block & Boothby 16
Lexmark International Inc. 67
Lockheed Martin Corp.....14
Lotus Development Corp. 12,44
Lucent Technologies Inc. 10,51
Mahle Inc.....39
MapInfo Corp.....55
Marimba Inc. 91
MarketMaps LLC 12
MCI WorldCom Inc. 16
McLaren/Hart Inc. 82,86
Meta Group Inc. 67
Micro Focus Group PLC 55
Microsoft Corp. 1,6,8,12,14,24,26,27,33,34,43,44,51,55,59,67,73,78,91,135
Middlesex Health System Inc.....43
Mobile Insights Inc. 8
Modis Inc. 97
Mustang Software Inc. 6
Mutual Insurance Co. of Arizona 86
Mylex Corp. 64
Nabisco Inc. 1
NASA.....12,55
National Conference of Commissioners on Uniform State Laws 1
NCR Corp.....16,135
Nelson Motivation Inc.....138
Netscape Communications Corp.....8,12,20,33,43,44,55
Network Computing Devices Inc. 135
Network General Corp. 16
News Internet Services 55
Nicholas-Applegate Capital Management.....73
Norrell Corp.....33
Nortel Networks 10,16
Novell Inc. 10,30
NVidia Corp. 16
OAO Corp. 12
Object Design Inc. 6
Object Management Group 6
Office Depot Inc.....43
Oracle Corp. 6,12,14,20,39,43,44,55,91,135,138
Orang-Otang Computers Inc. 138
Orlando Regional Health Care 1
Owens & Minor 97
Pacific Gas and Electric Energy Services 97
Packet Engines Inc. 91
Paladin Press.....138
Panasonic.....33
Partners Healthcare Systems Inc. 107
PeopleMover Inc. 39
Peoplesoft Inc.....39,55,67,78
Philips.....33
Platinum Technology Inc. 55
Plaut Consulting Inc.....39
PointCast Inc. 93
Progress Software Corp. 43
Proxim Inc. 51,135
QuarkComm Inc. 8
Qwest Communications Inc. 16
Rational Software Corp.....55
Recruiting Advantage.....97
Red Hat Sotware Inc. 20
Resort Technology Partners Inc. 51
Robert Half International Inc.....39
Ronin Corp. 4
Sagent Technology Inc. 67
SAP AG 39,55,59,78
SBC Communications Inc.....43
SCO Inc. 64
Sears, Roebuck and Co.....106,138
Security Forces Inc. 59
Sedona GeoServices Inc. 55
Serious Software Ltd. 55
Sharp 33
Siebel Systems Inc. 67
Sierra Wireless Inc. 135
Silknet Software Inc. 43
Simpson Industries Inc. 73
Society for Information Management ..1
Sony.....33
Soyo Inc.....64
Special Recognition Inc.....1
Speech Solutions Inc. 138
Sprint Corp. 16
Staff Builders Inc.....39
Starseed Inc. 12
Sterling Software Inc. 55
Summit Architects 51
Sun Microsystems Inc. 8,14,33,43,44,59,135
Sundstrand Aerospace Corp.....27
SWIFT 43
Swinerton & Walberg.....51
Sybase Inc.....14,67
Symantec Corp.....1
Teachers Credit Union.....27
Technology Managers Forum 1
Telxon Inc. 51
Texaco Corp.....138
The Boeing Co.....24
The Chase Manhattan Bank Corp. .8,135
The CIT Group Inc. 8
The Motley Fool.....73
The Through Transport Club 43
The Trades Publishing Co.....138
Thomas Bros. Maps 86
Toshiba Corp. 81
Toyota 43,78
Trilogy Software 55
Triple S Plastics Inc. 73
Two Crows Corp. 14
Unisys Corp.....6,51
Vadem Inc. 138
Vail Resorts Inc. 51
Vignette Corp.....47
Virage Inc. 43
Walt Disney Co. 27
Wawa Inc. 1
WBT Systems Inc. 39
Webcor Builders 51
WebLogic Inc. 91
Wells Fargo Bank 16
Winter, Wyman Contract Services.....106
WirelessKnowledge LLC.....8
Women in Technology International ..76
Workgroup Strategic Services Inc. 82
World Bank.....40
World Wide Web Consortium 34
Wyse Technology Inc. 135
Xerox Corp.....39
Zenith Sintered Products Inc. 82

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— April 27th issue, pg. 39.

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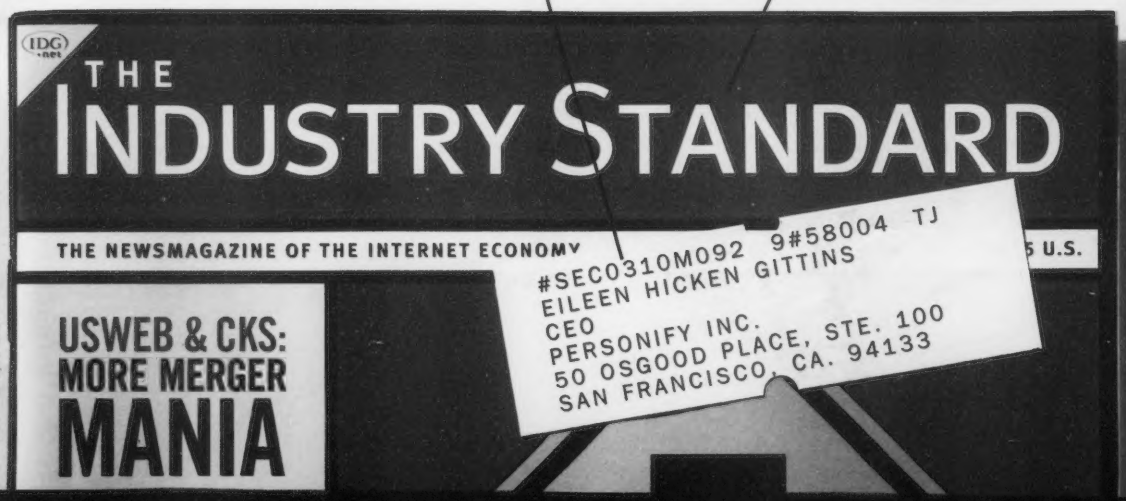

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Got a handheld? IT doesn't want to know

By April Jacobs

INFORMATION TECHNOLOGY managers are finding ways to cope with supporting the growing number of mobile PCs in their companies, but handheld support is a different and troublesome story.

Some IT managers have implemented a "don't ask, don't tell" policy. That means they aren't telling users they can't have handhelds, but they don't want to be asked for support.

"It's hopeless to really try to do something here in terms of really setting a standard," said Ken Dulaney, an analyst at Stamford, Conn.-based Gartner Group Inc. "For the first time, IT doesn't have ownership of the devices employees have."

Corporate users increasingly are relying on ever-cheaper mobile devices to give them access to key daily business information such as schedules, names, addresses and phone numbers. They're also using them to send and receive E-mail and to access applications.

"There has been a lot of back-door adoption of handhelds," said Jill House, an analyst at Framingham, Mass.-based International Data Corp. (IDC), a sister company to *Computerworld*. With handhelds' average price of $387, buying one isn't difficult.

HANDHELD HOPES

Most-wanted functionality and applications

- Password security
- Basic scheduling and organizer applications
- Applications to create forms and do data entry
- Database access
- Sales force automation

Base: From a survey in June 1998 of 600 corporate IT managers

Source: International Data Corp., Framingham, Mass.

At American President Lines Ltd. in Oakland, Calif., handheld users are rather numerous but still "on their own," according to Hans Hickler, vice president of information strategy.

"I can see everybody has their own, and it seems to be like an underground approach," said Alex Hu, a vice president at The Chase Manhattan Bank Corp. in New York. "IT knows they're out there, but [end users are] managing them themselves."

Hu said problems with the devices are few so far, but their growing numbers will force IT to take them seriously.

Besides concerns that corporate data will end up floating around in places it shouldn't, other problems associated with the devices include the fact that they're more complex to manage than PCs. Handhelds have a different operating system that requires integration, and there are security issues that must be addressed.

Dulaney said IT managers' biggest mobile PC support issue is that desktop management software doesn't enable them to manage mobile PCs. And handheld management isn't even close to happening.

Users also complain that making the devices useful for more than basic address capabilities is difficult — and security isn't easy to ensure.

"To some degree, vendors have overbuilt the capabilities of these devices," said Brian Burcham, global program manager at NCR Corp. in Dayton, Ohio. He said the net result is that although elementary tasks can be completed, more complex tasks can't be done efficiently. And essentials such as security don't get enough attention.

"And you can't just have anyone with a PDA accessing our network. You need security software on both ends," Burcham said. He added that when NCR tested 3Com Corp. PalmPilots, it couldn't find security software for personal digital assistants. "Our IT staff didn't want just anyone dialing in, so we decided not to support them."

House said corporate IT managers must make a clear decision on whether they're going to support handhelds and develop a strategy for doing so if the answer is yes.

Clearly, ignoring the little devices isn't going to make them go away. IDC estimates that 2.5 million will ship by the end of this year, compared with 6.7 million laptops. By the end of 2002, the number of handhelds will grow to 6.9 million.

"There are no policies, but in another year, or two, I'm sure all of a sudden IT will be hit like 'Boom!' " Hu said. He added that he's much more interested in maintaining the 450 laptop users in his department. □

MOREONLINE

For more information about mobile computing, visit *Computerworld online.*
www.computerworld.com/more

Chargeback

CONTINUED FROM PAGE 26

until people view E-mail as a utility on their desktop — like the phone — chargeback for messaging will remain a cutting-edge policy. "People haven't gotten to that point yet, but they're definitely close," he said.

Chargeback "is forcing technical people to be business people and putting bottom-line metrics on the messaging system to determine how costly it is," Ferris said.

The big question for many companies: How do you bill users? Ferris said some answers are per user, by business unit size, by the size of messages sent (in bytes) and the quantity of messages stored.

Analysts said there are plenty of homegrown and packaged tools for monitoring and measuring E-mail usage, including tools from vendors Tally Systems Corp. in Hanover, N.H., and MessageWise Inc. in Ottawa, Ontario.

Other deterrents to chargeback may be resistance from business units and end users to pay, and the complexity of being able to measure and bill back usage of multiple E-mail systems.

"If my company does too much work to enforce cost based on usage, we're afraid users may retreat from the central [messaging] directory," said George Ramick, an Internet E-mail manager for a unit of the U.S. Department of Transportation. The department's 73,000 users send an average of 320,000 messages per day.

E-mail managers must develop an understanding, with company management and end users, of the business needs for messaging, said Mary Fisher, director of strategic planning at Arinc Inc. in Annapolis, Md. Determine what constitutes business-critical messaging, then discuss what it will cost to provide such a service, she said. □

Many products, fewer big names at Comdex

By April Jacobs

ATTENDEES OF Comdex/Fall '98 are likely to see a plethora of hardware and Internet-related announcements, from handheld devices and thin clients to PCs, servers and Web tools.

Comdex is expected to feature about 2,000 exhibitors and draw 220,000 attendees to the Las Vegas Convention Center this week. But despite being the biggest and one of the longest-running desktop shows, the no-show list has been growing in recent years. This year, Compaq Computer Corp., Dell Computer Corp., IBM and Sun Microsystems Inc. won't host booths.

Those same vendors will make other investments, though — conducting press events and roundtables.

Key speakers include Microsoft Corp. CEO Bill Gates on Sunday, Compaq CEO Eckhard Pfeiffer and Oracle Corp. CEO Larry Ellison on Monday, and Intel Corp. CEO Craig Barrett on Tuesday.

WHAT'S IN STORE

Among the product parade, expect the following:

Several computer makers plan to show a variety of handhelds running "Jupiter," the latest version of Windows CE, to be released as the handheld PC Pro Edition. The operating system allows larger screens and keyboards that are nearly as big as a laptop.

Vendors such as **BSquare Corp.** in Bellevue, Wash., plan to show an array of development packages for Windows CE-based handhelds. And **3Com Corp.** in Santa Clara, Calif., is sponsoring a pavilion to show wireless and Internet access applications from third parties for its PalmPilot, which has an installed base of 2 million units. **AvantGo Inc.** in San Mateo, Calif., will demonstrate software to let host computers quickly transfer stock quotes and other information from Web sites to PalmPilots.

Wireless connectivity hardware for handhelds will be featured in the latest versions of PC Cards connected to antennas by **Proxim Inc.** in Mountain View, Calif., and **Sierra Wireless Inc.** in Richmond, British Columbia. Those cards allow handheld users to connect to wireless modems.

Microsoft's booth will include both thin- and fat-client software. At the software giant's partner pavilion, thin-client stalwarts such as **Boundless Technologies Inc., Network Computing Devices Inc.** and **Wyse Technology Inc.** will show their Windows-based terminals. And Microsoft will announce a second beta release of its Office 2000 suite to 700,000 testers in 43 countries.

On the Internet front, **Idream Software LLC** in Bothell, Wash., has developed a graphical front end for online shopping, which lets consumers drag and drop items into a "preview space" where they can mix and compare products. Version 1.0 will ship next month; single-server licenses cost $14,995.

Corel Corp. in Ottawa will announce that it will license Waltham, Mass.-based **Trellix Corp.'s** Web authoring and presentation software and bundle it in the WordPerfect Office suite. Users don't need to know HTML, the Web programming language, to use the product.

Novell Inc. in Provo, Utah, will update show-goers on its NetWare 5.0 network operating system and its recently announced bundling deal with Nortel Networks that would integrate Novell Directory Services with **Nortel Networks'** (formerly Bay Networks Inc.) Optivity Policy Services applications suite. □

IT not home for holidays

CONTINUED FROM PAGE 1

convert to a newer, year 2000-compliant version of manufacturing software.

"It's a drag," Frick said of the revved-up project schedule and extra work. "A lot is being crammed in due to the company's goal of finishing as much as possible in 1998. It's too much, too fast, unreasonable and excessive."

To help soften the sting and boost worker morale during the crunch, some companies are offering incentives that range from full-course holiday meals to extra pay and additional time off after the first of the year.

At Automatic Data Processing Corp. in Roseland, N.J., IT workers collect an extra $100 each month for wearing a beeper around the clock.

"The extra money's just for carrying the beeper, whether they get called or not," said Dan Gamarello, vice president of product development at the payroll processing company.

Workers also can order meals, at company expense, from dozens of area restaurants.

"I don't expect them to bring in a bottle of Dom Perignon [champagne], but they don't want Burger King night after night, either," Gamarello said.

Hoechst plans to serve its IT workers three meals per day. The company also has increased from five to 10 the number of vacation days IT workers can carry over to next year. If workers have accrued more than 10 days, Hoechst will pay them for the additional days.

Meanwhile, Orlando Regional Health Care System is taking the opposite approach.

"We're giving our people the holidays off this year because chances are they won't be able to have any time off next year," said Rick Ridge, year 2000 project director at the company in Orlando, Fla.

Nabisco Inc. in East Hanover, N.J., is giving IT workers the vacation days they request this year. But that's because the company has put a moratorium on IT worker vacations between mid-December 1999 through mid-January 2000.

"We're expecting no one to be on vacation for those four weeks, but we wanted to make sure not to do that two years in a row," said Tony Del Duca, vice president of information services.

Wawa Inc. IT manager Dave Kelble said he managed to skirt the vacation issue up front by buying separate hardware on which to test remediated year 2000 software code. That way, IT workers at the Wawa, Pa.-based company wouldn't have to wait until users were out of the office during weekends and holidays to test the systems.

"When we started this project, I remember people talking about how many weekends there were left to solve the problem. I figured, Let's just buy the [extra test] systems now, and we can always put them into production somewhere later on," Kelble recalled.

But when IT workers do come in to work during the holidays, employers "need to address the family issue," said Gerard Walsh, a vice president at Special Recognition Inc., a Whitehouse Station, N.J., firm that helps companies set up IT retention plans.

For one client, Walsh said his company is putting together a "complete outsourced Thanksgiving dinner" for IT workers who will be expected to show up the day after the holiday.

"The company is providing the meal on Thursday in workers' homes, but the staff is coming in on Friday," he said.

At other firms, Walsh said, workers are being offered a bonus, an electronic device or some other gift in lieu of carrying over more vacation days than is typical under company policies. After all, "you don't want someone racking up eight weeks of vacation that they'll want to take in 1999," he said. □

Senior editor Barb Cole-Golmolski contributed to this story.

Code revision could hurt users

CONTINUED FROM PAGE 1

and allows vendors to charge separately for software licenses, maintenance and support.

"This is going to make CIOs very uncomfortable," Nycum said, because they will have to spend much more time and resources in the buying cycle to negotiate for better contract terms.

The current draft of Article 2B also would strengthen the enforceability of shrink-wrapped software's licenses. Most experts contend that, today, those licenses aren't enforceable, so most user companies spend little time negotiating terms with vendors.

Under the UCC changes, user companies would be forced to devote a lot more time and resources to negotiating those terms in their contracts, Nycum said. Shrink-wrapped software accounts for about half of corporate software purchases, analysts said.

The proposed change to the UCC is "an important issue being overlooked by the people most directly affected by it: the IT community," says lawyer Robert A. Currie of Georgia-Pacific

COSTLY MEASURE

Nycum estimated that, if states adopt Article 2B, information technology shops would have to spend twice as much on license fees and administrative costs to negotiate software deals. Yet few CIOs are even aware of it.

"It's an important issue being overlooked by the people most directly affected by it: the IT community," said Robert A. Currie, chief counsel for intellectual property at Georgia-Pacific Corp. in Atlanta. Currie said efforts by SIM and other groups to raise awareness about Article 2B are helping.

Corporate IT customers are "underrepresented" in the proposed Article 2B, "and they don't have a lot of people advocating for them," said Priscilla Tate, executive director at the Technology Managers Forum, a New York-based association that facilitates discussion between IT executives and vendors about licensing and other issues.

The changes to the UCC are being drafted by a joint committee of the National Conference of Commissioners on Uniform State Laws (NCCUSL) in Chicago and the American Law Institute in Philadelphia.

The panel met last weekend in Emeryville, Calif., to discuss the Article 2B draft, which could be approved by July, after the NCCUSL's annual meeting. Each state legislature would then decide whether to revise its commercial contract law to match the UCC revisions.

Vendors claim Article 2B is intended to make software contract laws more consistent among states. "The objective here is to produce clarity and predictability in transactions between [software] producers and consumers," said Emery Simon, counsel to the Business Software Alliance, a Washington-based trade association representing software companies such as Microsoft Corp. and Symantec Corp.

Others disagree. Article 2B "is a dangerous piece of legislation . . . backed by [the] power and money" of the U.S. software industry, wrote critic Cem Kaner, a Santa Clara, Calif.-based lawyer and former programmer, on his Web site. □

To find out more about the proposed Article 2B of the Uniform Commercial Code, visit these Web sites:

- ***www.cptech.org.***
- ***www.badsoftware.com***
- ***www.2bguide.com***
- ***www.lawlib.uh.edu/ucc2b***

Beefed-up backup offers more control

By Nancy Dillon

EMC CORP. today will announce souped-up versions of its software tools for storage mirroring and replication.

The Hopkinton, Mass., storage firm will enhance its remote data-replication software, Symmetrix Remote Data Facility (SRDF), with remote-control support and the ability to create management groups for volumes spread across multiple EMC Symmetrix arrays. The new SRDF also will offer online data-flow reversal, so targets can replicate back to sources with no application downtime.

Version 3.2.1 of TimeFinder, EMC's data-mirroring software, will offer remote-control support and the ability to refresh only the data that has changed since the last update. It will also let users select individual data sets for mirroring, as opposed to entire volumes.

One user said TimeFinder's previous lack of data-set-level management was the reason his year 2000 group ditched the product in favor of IBM's SnapShot software on an IBM Ramac Virtual Array.

"In an environment like ours, you may have many data sets on a particular volume that you don't want to copy," said Jack Blanchard, senior systems consultant at BankBoston Corp. Separating those out saves mirrored disk space and other resources, he said. □

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The Back Page

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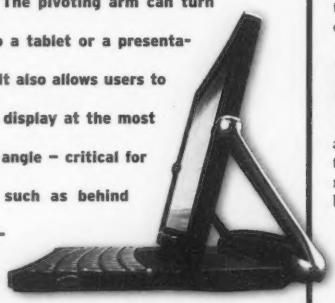
Dispatches & images from the fringes of the electronic frontier

TABLET SWINGS INTO ACTION

So maybe notebook computers don't all have to look the same. Frogdesign Inc. helped mobile computing vendor Vadem Inc. (*www.vadem.com*) develop the $999 Clio portable computer, which features the patented Swing-Top design. The pivoting arm can turn the Clio into a tablet or a presentation device. It also allows users to position the display at the most comfortable angle — critical for tight areas such as behind reclining airplane seats.



News to ponder

Eight million adults in the U.S. use the Internet and watch TV simultaneously at least once a week, according to research by Inteco Corp. in Norwalk, Conn. These so-called "telewebbers" are very receptive to advertising and online shopping, and they are more likely than the average Internet user to visit a Web site advertised on TV.

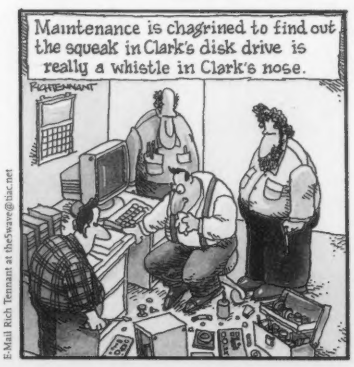
Philadelphia-based Speech Solutions Inc. offers a software kit for making Web pages talk and listen to customers. Online visitors can be greeted with personalized messages and suggestions and then are offered a list of phrases they can say to the Web site.

NASA technology for measuring brain waves is being used to figure out whether members of an audience are really paying attention to a presentation or commercial. The system, licensed by Capita Research Group Inc. in King of Prussia, Pa., monitors brain waves and computes a second-by-second audience "engagement index" that could be very useful in the TV advertising industry.

Wrist-ware for primates

There are several brands of belt-mounted cases for PalmPilots and similar handheld PCs. But the Peel-It from Orang-Otang Computers Inc. (*www.orang-otang.com*) can also be strapped onto your arm to keep the PalmPilot always ready in the right position. The bright yellow canvas holder costs $49.95.

THE FIFTH WAVE *by Rich Tennant*



E-Mail Rich Tennant at the5wave@tiac.net

Inside Lines

Year 2000 hits the mainstream

It's no longer a worry just for governments, vendors and IT managers. The millennium bug has hit the mainstream. For example, Boulder, Colo.-based Paladin Press — which specializes in survivalist and mercenary guidebooks — has added *The Y2K Computer Crash Scenario* alongside *Improvised, Modified Firearms* to its arsenal of books. The 55-page manual is brimming with tips on how to survive a disaster with "the potential to be just as catastrophic as God's response in Babel." One example: Have a local police department run your criminal record just prior to the date change. For anyone with computer-savvy enemies, that precaution should protect against a fabricated rap sheet. Paladin isn't alone: Some companies are pushing survival supplies such as fuel and military-style MRE (Meals Ready to Eat). Along those lines, check out this Usenet sign-off from Jace Crouch, who co-discovered the still-in-dispute "Crouch-Echlin" Y2K bug in PCs: "Peace & stocking up on sterno and propane and MREs." And Trades Publishing in Crossville, Tenn., has advertised its biweekly "Y2K News Magazine" newsletter in, of all places, the Winter 1998 edition of *Reform Judaism* magazine. "Troubled waters ahead. Have you built your ark?" the ad asks. Talk about millennial warnings.

Concord, Cisco join forces

Network market leaders Concord Communications in Marlboro, Mass., and Cisco Systems in San Jose, Calif., are expected to announce within the next several weeks a sales and development relationship that will result in Concord's Network Health performance reporting and analysis being enhanced to cover Cisco WAN products. It will help users optimize WAN switch performance and plan for network capacity, all from a single management station. That's supposed to be the first of several products resulting from the relationship. A spokesman for Concord confirmed the plans, but a Cisco spokeswoman declined to comment.

Jobs 1: How to get new employees

Internships continue to be fertile recruiting ground for IT departments. Retailer Sears, Roebuck hired eight of the 13 interns who worked in its IT department last year, says Bill Brannen, director of human resources for IS.

Jobs 2: How you might keep them

Bob Nelson, president of Nelson Motivation, a San Diego-based company that helps put employee-recognition plans in place, says IT department workers are unique when it comes to perks. "They like to play practical jokes on each other," Nelson notes, so at some of his client sites, IT workers have been rewarded with an opportunity to pull pranks on their colleagues. The jokes "usually involve computers," he says.

Jobs 3: But why you'll need to keep looking

What's the matter with kids these days? Consider this story overheard on a bus at Oracle OpenWorld last week. A data center manager who appeared to be in his 50s was complaining to the man next to him about a particularly grating instance of staff turnover. The company had hired a 21-year-old developer right out of college who studied SQL but not Oracle's PL/SQL. So the company trained him and even gave him a raise after about six months. But on the 366th day of his employment, the kid handed in a resignation letter and left for a job that paid more money. Of 15 people who started a current project, only eight are left.

We all love technology. But we don't always get it right. For example, check out this voice-mail recording at Texaco in White Plains, N.Y.: "You have been forwarded to our voice-mail system. However, the person at this extension does not subscribe to this service. Goodbye." Be assured that Computerworld's *voice mail works just fine, so go ahead and try it out by leaving a news tip or tidbit for news editor Patricia Keefe at (508) 820-8183. Or let your fingers do the talking by sending her an E-mail at patricia_keefe@computerworld.com.*

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